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## CONCRETE PAVEMENT AT MARSHALLTOWN

Low Contract Prices Secured Partly by Not Requiring Maintenance Bond.—Tar Paper Used for Transverse and Middle Longitudinal Contraction Joints.—Method of Constructing.

By HARRY J. RODGERS.

Soon after Marshalltown, Iowa, adopted the commission plan of government in 1911, it laid its first concrete pavement. During that year and 1912 it put down four miles, or 75,000 square yards, and 30,000 feet of concrete curb at an expenditure of \$95,041.10. The low cost of most of this pavement and the methods of construction and of placing expansion joints and their fillers present some unusual, new and interesting details.

First among these is the price of \$1.08 per square yard at which the 1912 contracts for 60,000 square yards were awarded to Elzy & Carlson, local contractors. This price was one of the lowest paid for similar pavement in the state during that season. One of the reasons the bids were so low was because the commissioners and city engineer W. H. Steiner, instead of requiring the contractors to post a large maintenance bond, insisted on as rigid an inspection of the work and tests of the materials as they could. Another reason was the cheapness of gravel, sand and cement, especially the two first named materials.

An inspector was stationed at the mixer and another worked with the spreading and finishing gang. Each carload of cement was submitted to the standard tests of the American Society of Civil Engineers and the commissioners insisted that the gravel and sand grade up to specifications.

The combined sand and gravel was taken from the bed of the Iowa river and from old river channels in the valley inside the city limits. The aggregate was pumped and discharged over a one-quarter inch screen, separating the stone and sand. The small cost of pump-

ing and screening, and the short haul from gravel beds to mixer, made the low cost of these materials an important item in the contractors' estimates.

A feature of the construction was the arrangement of the expansion joints and the method by which the filler was placed in them. All of the pavement was laid in residence streets. Most of it was 30 feet wide. The curb was not combined with the gutter but was poured separately. In addition to an expansion joint three-quarters of an inch wide next to each curb, a longitudinal joint one-quarter inch wide was placed in the center of the street. Transverse joints, also one-quarter inch in width, were spaced at 15-foot intervals, dividing the pavement into blocks 15-feet square. All these joints extended down to the sub-grade. Those next the curbs were filled with an asphaltic filler. The longitudinal and transverse joints were filled with rubberoid, or a good grade of tar paper. This paper was put in while the pavement was being laid.

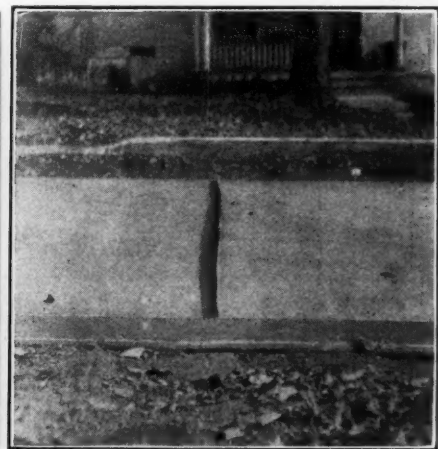
The method of placing the filler in the cross and lengthwise joints is a new one that has been adopted in few other cities. The pavement was laid only half the width of the street at a time. The paper was placed in the transverse joints as the concrete was spread and tamped. A strip of rubberoid about 8 inches wide was held in place alongside a plank 15 feet long, while the concrete was being spread on both sides of the plank. The plank was then lifted, leaving the filler in place, with about an inch of it projecting above the wearing surface. After the pavement set, the protruding edge of the paper was trimmed with a sharp shovel flush with



Placing Paper by Use of Plank.



Withdrawing Plank, Leaving Paper in Place.



One Side of Street Completed, Before Paper Has Been Trimmed Off.

MAKING TRANSVERSE JOINTS WITH TAR PAPER.

the top of the pavement. The longitudinal joint was established while the first half of the paving was being laid along one side, by staking a line of planks, 7 inches wide, along the center of the street. When the concrete had begun to set the planks were removed and strips of rubberoid were tacked to the edge of the finished side from which the planks had been taken. The top edge of the paper was set flush with the surface. The other half of the street was then paved.

The city engineer originated the idea of the joint in the center of the street after he had observed, when inspecting concrete pavement in other cities, that where there was no such joint the pavement had cracked in more or less zigzag lines longitudinally near the center of the street. The central joint checks any transverse cracks from extending farther across than the center. The crosswise and lengthwise joints divide the pavement into 15 foot blocks, making it easy, if a block becomes defective from any cause, to remove it and lay new concrete without affecting the rest of the pavement.

Wanting to make a comparative test with another kind of filler for the longitudinal joint, city engineer Steiner secured waivers from property owners in one block, and, instead of placing rubberoid in the central joint, the joint was cut and the cut was filled with pitch. The object aimed at is to test the wearing qualities of the edges of the central joint when different fillers are used. Eighteen months' use shows that some of the edges of the longitudinal joints filled with rubberoid are chipping, but in most places they show no more wear than the rest of the pavement.

This pavement consists of a 5-inch base, composed of 1 part cement, 3 parts sand and 5 parts gravel. The 2-inch wearing surface is composed of 1 part cement to 2 parts of sand. The wearing surface is laid as soon as the base is spread, tamped and brought to grade, and is roughened with a coarse broom.

The 1911 contract was awarded at \$1.18 per square yard, excepting some resurfacing. This concrete was 5 inches thick and cost \$.98 per square yard. The 1912 curb contract was let for \$.35 a lineal foot. So far all this pavement has proved satisfactory, and the city expects to let 18,000 to 35,000 square yards more next spring. Petitions were filed during the season asking for 14 blocks more than were laid in 1912 but they could not be granted because of a lack of improvement funds.

#### RUSTIC STREET RAILWAY STATIONS.

Various cities in Southern California make use of rustic, palm thatched structures for street railway stations, temporary shelters against wind or rain. A cheap building for this purpose made of lumber would be far less attractive than the very inexpensive yet artistic type shown in this picture. It consists of six eucalyptus up-



RUSTIC STREET RAILWAY STATION.

rights, with a balustrade, a rustic bench and a roof of boughs with the bark on and a thatch of fronds of the palm. It stands upon a light bridge that spans the irrigating ditch running through town. This photograph is from Riverside, while the cities of Redlands, Ontario and Upland have structures of the same character in their streets along the car tracks. This style is particularly appropriate in the wide avenues bordered with large trees, which are prominent features of the cities of Southern California.

#### ORDERING MUNICIPAL SUPPLIES.

##### Methods and Forms Used by Comptroller of Baltimore. —Checking Fulfilment of Orders before Payment of Bills.

By WILLIAM TALBOTT CHILDS, Deputy City Comptroller of Baltimore.

As early as 1879 the mayor and city council of Baltimore, Md., enacted an ordinance with a view to placing a check upon the ordering of supplies or work done by the various city departments; and this ordinance, now codified in the Baltimore City Code of 1906, Article 6, Section 33, reads as follows:

It shall not be lawful for the Comptroller to honor any bill or warrant for the payment for work done or supplies ordered for the use of the city of Baltimore, or of any municipal official, officer, agency, employe, servant or agent of the city of Baltimore, unless the written order for such work or supplies, signed by the person or persons ordering the same, shall accompany the bill or warrant for payment.

Like many other wise provisions, non-enforcement from time to time made this provision practically a dead letter until, with a change of administration in 1911, it was resurrected and re-enforced. It was early discovered, however, that the spirit of the old ordinance was not always being adhered to, notwithstanding the compliance with the letter of the law. The ordinance, it will be observed, requires that "*the written order for such work or supplies, signed by the person or persons ordering the same, shall accompany the bill or warrant for payment.*" But notwithstanding that the original written signed order accompanied the vendor's bill when sent, by the department ordering the supplies or work, to the comptroller for auditing and the ordering of its payment, it was felt by him, with sufficiently good reasons, that in not a few instances the order accompanying the bill to his department for payment in reality had never left the office of the department issuing the same until the order was taken, with the vendor's bill, to the comptroller for payment; but that the supplies or work had been ordered verbally, perhaps by telephone, and that the department, to comply with the letter of the law, had, upon receipt of the vendor's bill long after the supplies or work were ordered, prepared an antedated order to accompany the vendor's bill to the comptroller for payment. To say the least, such a practice was vicious!

Again, it came to the notice of the comptroller that the payment of some bills was being duplicated through the lack of proper system of the city departments and also through the lack of proper system of vendors in rendering a second bill and not designating on its face "duplicate." To be sure the vendor was equally culpable of laxity with the municipal department.

It became quite apparent, therefore, that the system in vogue at Baltimore was practically worthless as a check upon the receipt of goods or the fulfilment of orders, and that the ordinance enacted for its enforcement was no better. A meeting was thereupon called of the chief clerks of all the city departments and the



whole subject thoroughly discussed. This procedure was adopted rather than the comptroller deciding himself upon a plan and issuing instructions accordingly, in order that there might be an exchange of views, which of course is always beneficial, to superior as well as subordinate. Subsequently, after more careful study and bearing in mind existing ordinances regulating the accounting system of the city, a system was evolved by the Financial Department of the city and instructions issued by the comptroller for its institution on July 1, last.

The new system requires three essentials, namely:

1 (a) Signature of city employe who orders the supplies or work to be done and (b) approval of the order by the head of the department.

2 Signature of vendor or his representative or person who fills the order; and, of course, this must be the person or firm to whom the order is directed by the city department.

3 Signature of city employe who actually receives the goods ordered or attests to fulfilment of order.

It is thought that such an order will insure that no bill for city supplies or work will be paid unless such supplies or work are properly ordered and the supplies are actually received or work is actually done.

As the original order must accompany the vendor's bill for payment, it was arranged to have the orders made in triplicate, the duplicate copy to be retained by the vendor and the triplicate copy by the department, the triplicate to be found permanently in the department's order book.

The ideal system no doubt would be for the city to have a purchasing agent and storekeeper, as prevails with the large private corporations and railroads, and for all departmental supplies to be ordered by written requisitions on the purchasing agent. Such a system would, of course, require the forwarding to the city comptroller of duplicates of all requisitions and orders.

## CITY SMOKE ORDINANCES.

### Synopsis and Comparison by Bureau of Mines.—Progress Made in Smoke Abatement.—Functions of Smoke Ordinances.

A bulletin has recently been issued by the Bureau of Mines which was prepared by Samuel B. Flagg, in which he presents the results of an investigation by the Bureau of Mines into the matter of smoke ordinances in the various cities of the country, and their effectiveness. We present below an abstract of parts of this bulletin, but recommend that copies of it be obtained by every city which is interested in the subject of smoke abatement.

In connection with the investigation, smoke ordinances were obtained from practically every city of the country which had adopted any such ordinances, and this bulletin contains the full ordinances of Chicago, which is considered to be "perhaps the most comprehensive and most complete of those in effect in the large cities of the United States. Its requirements apply particularly to the needs of a great industrial centre where

coals, high in volatile matter, are the chief available fuel"; of Pittsburgh, which, "Applies especially to a large manufacturing city in which many metallurgical plants complicate the problem of smoke abatement"; of Des Moines, which, "is presented as an example of an ordinance drawn for a relatively small city in which high-volatile coals are burned almost exclusively"; of Milwaukee; of Los Angeles, which, "is presented because it was adopted by a city in which oil is the principal fuel," and the Massachusetts act providing for the abatement of smoke in the city of Boston and vicinity.

In the general discussion of the problem, the author states that different cities require different treatment of the smoke problem, which is affected by topography and climatic conditions,

character of fuel, nature of industries, importance as railroad centre, etc. The bearing of the last item is shown by the statement that in Chicago locomotives produce 43 per cent. of all the smoke emitted.

"Undoubtedly the greatest improvement in connection with smoke emission has been made in the stationary steam boiler furnaces, although in some localities the amount of locomotive and steamboat smoke has been greatly reduced." This is partly explained by the more exact knowledge concerning the designing and operation of stationary furnaces.

In investigating the smoke ordinances now in operation, the cities were divided into three groups, the first comprising those of less than 50,000 inhabitants, the second those between 50,000 to 200,000, and the third those having over 200,000 inhabitants. Out of approximately 240 cities of the first group, only 12 reported having either a smoke ordinance or an official charged

Read carefully. No bills will be paid unless all provisions of this order are complied with.	
Order No. 20	COMPTROLLER'S DEPARTMENT CITY HALL Baltimore, Md. July 27, 1913
To: George A. Burgandy & Bro.	Voucher No. 19426
Address: 2245 Ripple Street, C-i-t-y	<b>ORIGINAL</b> TO BE RETURNED WITH BILL
Please furnish, subject to inspection and approval, for use of this Department:	
Quantity 2 Doz	Market Brooms, 28 per Contract No. 2247, June 4, 1912, at \$3.00
	Per \$6.00
Deliver to Geo. Don, Asst. Market Master, Baltimore Market.	
Approved by: <i>[Signature]</i> Deputy Comptroller	Ordered by: <i>[Signature]</i>
NOTE. Original order must be dated and signed by drawee, who must get the signature of person who receives goods ordered or certifies to fulfilment of order, and order must be returned to Department with bill in duplicate. (Article 6, Section 33, Code of 1906.)	
Order filled: 7/28/12	by Geo. A. Burgandy, Esq. per Smith
Received or attested: 7/28/12	by Geo. Don, Asst. Market Master, Baltimore

ORDER FORM USED BY BALTIMORE COMPTROLLER'S DEPARTMENT.

The original of the new form to be used by the comptroller's department is herewith reproduced, the size being 7x9 inches. The duplicate and triplicate copies are counterparts of the original except that the duplicate cross lettering reads:

#### D U P L I C A T E

To be retained by Vendor;  
and the triplicate reads

#### T R I P L I C A T E

To be retained by department.

This system, to be sure, is not so perfect that it will automatically and absolutely prevent all mistakes, fraud and collusion, but it is a decided improvement on its predecessor and is perhaps the best that can be evolved under existing ordinances and city charter, for, unlike private corporations, public corporations are held to hard and fast rules and regulations that cannot be changed at the will of the few, but only by the vote of the majority.

with smoke inspection; of 60 replies in the second group, 17 reported having such ordinance or official; and of the 28 cities of the third group, 5 are making practically no effort toward smoke abatement, but in 3 of these the smoke problem is not serious, since fuel oil is used almost exclusively. Of the second group—the medium size cities—the most active are Des Moines, Ia., Lowell, Mass., Syracuse, N. Y., Toledo, O., Richmond, Va., and Atlanta, Ga. At the time of writing the report, Nashville, Tenn., was considering the passing of an ordinance modeled rather closely after that of Des Moines, which in turn resembles the Chicago statute.

Of the 28 larger cities, Chicago is credited with having made more marked progress toward the scientific solution of the smoke problem than any other American city. "This result is due very largely to the fact that smoke abatement has there, more generally than elsewhere, been recognized and attacked as an engineering problem, and greater efforts have been made to obtain co-operation between plant owners and operators and the city officials. As a result of these efforts, for practically every type of boiler, for stoker and for hand fired operation, there have been developed settings that make possible the attainment of average or even high boiler capacities, while keeping the density of the smoke produced well within that allowed by the ordinance." New Orleans has no smoke ordinance and no smoke abatement work is being done by the city officials. Portland, Ore., has a section in the general code prohibiting the emission of dense smoke but has no smoke inspector and no organized or systematic smoke abatement efforts are being carried on. The need for such work, however, is not great on account of the almost exclusive use of oil fuel. For the same reason, San Francisco has no smoke ordinance and is making no organized effort toward smoke abatement; and in Seattle the conditions are practically the same, as the use of oil fuel has become more and more general.

Although the passage of a proper ordinance is not, by any means, the solution of the smoke-abatement problem, it is, however, one of the most important steps, and a clear realization of the function of such a statute is therefore essential.

In order to make easier and more certain its enforcement, the ordinance should state definitely what density of smoke is permissible and what density shall not be emitted. Some practical standard of comparison by which the density of the smoke may be determined should be specified. A few of the cities have adopted for this purpose a piece of glass of a certain color and density, and the ordinances in these cities specify that smoke of darker color or of greater density than that of a certain number of thicknesses of this "standard" glass is prohibited. When this method of comparison is used the observer, by looking through the glass with one eye and through or at the smoke with the other, determines whether the glass or the smoke cuts off the greater per cent. of the light from the sky.

Other cities use as a standard a chart made by laying out on a white card black lines of specified width at right angles to each other and with a given spacing. The chart is placed in line with the stack with which it is to be compared and at such a distance from the observer's eye that the ruled-line area appears to be of a uniform shade or color. The smoke observed must not be darker than the chart. A large proportion of the cities simply prohibit the emission of "dense" gray or black smoke and do not further define the word "dense." Obviously, an ordinance so formulated leaves open for argument the question as to what is dense smoke, and conviction for violation will for that reason be more difficult.

In fixing the density of smoke that is to be permitted, the requirements should be representative of the best practice; the standard set should not be an impossible nor an impracticable one, neither should it represent ordinary or poor practice. Since the prime object in making these requirements is to bring about an improvement, the standard should be an improvement over the existing local average, in the determination of which the local conditions must be given thorough consideration. In order that the requirements so fixed may be observed, sufficient provision must, of course, be made for penalizing those who refuse to do so.

Another and larger function of the ordinance is to provide ways and means for keeping existing plants within the requirements and for preventing in the future as far as possible the installation of improperly designed furnace equipment. Obviously, to accomplish the purpose just mentioned there must be persistent and systematic effort. In other words, organization is necessary, and the ordinance should specify how the work is to be organized, and also the necessary qualifications of those who are to be appointed to carry it on. Satisfactory progress will seldom be made unless the organization is such that certain officials or employees give their entire attention to the smoke-abatement work and are held responsible for the results produced.

If the installation of improperly designed furnaces is prevented, the policing duties of the smoke inspectors will eventually be reduced to a minimum. The advisability of making this sort of provision is clearly shown in nearly any one of the cities where this protective work is not done, by the fact that some of the newest plants have been so constructed that dense smoke is emitted a large part of the time, even though the firing may be done with a fair degree of care and intelligence. The smoke ordinance should therefore require that plans and specifications for all construction work on furnaces be submitted to the smoke inspector and be approved by him before work is started. If this protective feature is to be included, the smoke inspector must be an engineer, qualified by technical training and experience for the duties of the office, and the ordinance should specify that these qualifications are required.

It may at first appear that if the smoke inspector is to be given the power to decide what furnaces may be installed and what shall be forbidden, the owners or operators should not be held liable for smoke emitted from furnaces constructed according to approved plans. The adoption of any such provision for immunity, however, would release the operator from all responsibility for the way in which the fires were handled. Practically every furnace will produce smoke if improperly handled; hence the operator must be held responsible for the way in which the stoking is done. The inspection of drawings is provided for, not with the idea that the smoke inspector shall design plants for the owners, but rather that he may withhold his approval of plans for work that is known to be improperly designed.

The exact form that the ordinance for any particular city should take can be decided upon only after a study has been made of the existing local conditions. Experience has shown, however, that certain features are desirable and that certain others are undesirable. The bulletin presents two specimen forms for such enactments, one adapted to the average conditions of a city of about 200,000 population or over, the other for a city of smaller size; although it is not expected that these will be adopted for any city without some change. The ordinance for the large city provides for the creation of a department of smoke inspection with a smoke inspector as its head, who shall be appointed by the mayor, and shall be a "mechanical engineer qualified by techni-



cal training and experience in the theory and practice of the construction and operation of steam boilers and furnaces; also in the theory and practice of smoke abatement and prevention." In the ordinance for the medium size city the office of smoke inspector, rather than a separate department, is provided for, the requirements for this inspector being the same as for the head of the department in the larger city. In both cases, assistant smoke inspectors and clerks are provided for; also a smoke abatement committee composed of seven representative citizens to act as advisors, which may also procure the services of a consulting mechanical engineer of recognized ability in the case of the smaller city, and an advisory board of three mechanical engineers in the case of the larger city, to act as consulting engineers to the committee. It is provided in both cases that no new plant shall be built nor old plant reconstructed for the production of power or heat until the plans and specifications therefor have been approved by the inspector and a permit issued by him, and such plant shall not be used until the smoke inspector has issued a certificate stating that it can be run without producing smoke.

The ordinance then proceeds to prohibit the emission of dense smoke except under certain conditions, defining dense smoke as that which is of greater density than No. 3 of the Ringelmann Chart. Other sections provide for penalties for violation of the ordinance; for the providing of such implements, books and equipment as may be necessary for the smoke inspector; provide that the inspector shall keep a record of all permits issued, examinations made and stacks observed; shall make an annual report to the mayor and council; and that anyone acting for the city in connection with smoke abatement who should take any bribe for favoring anyone in connection with his duties shall be fined, dismissed from the service and forfeit his bond.

"The real reason that more has not been accomplished up to the present time in many of our cities is that, through ignorance or indifference, money and efforts have been wrongly applied. The complete elimination of the smoke nuisance will not be possible in such cities until improved and radically different methods of utilizing the fuel are adopted."

#### A COBBLE STONE PARK GATE.

As another illustration of the use of cobble stones in municipal structures, Fred R. Charles, city engineer of Richmond, Ind., has sent us the photograph shown herewith of an entrance to one of the city parks.

Concerning that he says: "The sign on the arch may not be especially beautiful, but it has a reason for being, as it is along the 'Old National Road' built by the government, which road is traversed by thousands of tourists both in automobiles and interurban cars, and it is of interest to them to know the landmarks along the route."



COBBLE STONE PARK GATE.

## NEW JERSEY ROAD REPORT.

### Meeting Maintenance Costs.—Results of Experiments with Various Kinds of Road Surfacing.—Maximum Curvature Permissible.

In the report of Col. Edwin A. Stevens, State Road Commissioner of New Jersey, for the year 1912, there are several matters which are discussed by him in a way which makes them of general interest to road superintendents. Among these is the matter of maintenance. He states that the maintenance of roads, especially by the counties and cities, is inadequate, for which he considers politics and the uncertain tenure of office of road commissioners to be largely responsible. To make better maintenance possible, he recommends that all counties and municipalities be required, as a requisite to receipt of state aid, to comply with such regulations as shall end the present undesirable conditions. These regulations should include the adopting of civil service rules to cover the county engineer and the county supervisor of roads and their subordinates; the fixing of rules defining the duties and limits of authority of each of these officers; the providing of machinery and implements and materials necessary for maintenance work, and the keeping of the roads up to a standard to be set by the state department.

In order to meet the increased cost of maintaining the roads up to the desired standard, he suggests that the more powerful class of cars and motor trucks should bear a larger share of this expense, since they inflict the greatest amount of damage upon the roads. The present system of roads within the state totals 1,500 miles, and Col. Stevens estimates that the proper maintenance of these would require an expenditure of approximately \$900,000 to \$1,200,000 a year.

The state department has for some time been experimenting with various types of pavement, concerning which the following statements were made:

"While both first cost, yearly maintenance charge and probable life all enter as factors into the determination of the economical pavement for any given case, and while the latter factors can, for lack of experience, in many cases, be estimated only, the experimental work done seems to justify the conclusion that both our stone and gravel roads can be resurfaced so as to bear the ever-increasing weight of traffic without exceeding a reasonable cost of repair.

"For this purpose on our principal roads we may have to rely largely on Portland cement concrete, either for the whole road structure or as a base carrying a bituminous surface. The experimental work also indicates the superiority of certain brands of tar as a dust layer over the lighter asphalt oils and the non-asphaltic oils, especially on gravel roads. It also shows that gravel roads can be maintained all the year in proper shape at a reasonable cost.

"The following is a report of a few things accomplished with money from the motor vehicle fund.

"The gravel roads of South Jersey are all that can be desired during a large part of the year, but during some parts of the winter and in the spring, when the frost is coming out of the ground they become soft and slippery, and it is often very difficult to go over them.

"Various materials are now being used to try and make these roads 'hard, firm and convenient for travel at all seasons of the year,' as provided by law.

"In the fall of 1911 glutrin, a product obtained from the manufacture of wood-pulp, was applied on a short piece of the Meadow boulevard, the gravel road connecting Atlantic City with the mainland. During the

spring of 1912, which was an unusually severe one on the roads, this piece showed a marked improvement over the adjacent untreated sections, being more thoroughly bonded. Consequently it did not rut and it proved to be very satisfactory.

"The main road from Camden to Atlantic City was badly heaved in many places during the spring. These places were fixed temporarily with cinders in order to make the road passable. Gravel was put on later, and in the fall the Atlantic county section of the road was treated with glutrin. Before applying the material the road was scraped, to remove any existing inequalities. The glutrin was shipped in barrels, pumped by hand into an ordinary sprinkling wagon, which was first filled half full of water, and this mixture sprinkled on the road at the rate of about one-half gallon of glutrin per square yard of surface.

"On the Mays Landing-Pleasantville gravel road we have applied liquid asphalt and Trinidad asphalt. These were applied under pressure from a special distributor at the rate of one-half gallon per square yard and left uncovered. This was put on in August and has so far given good results.

"A section of the gravel road from Chambers Corner to Mt. Holly, in Burlington county, has been treated with ugite, a water-gas tar. The material was applied from a pressure distributor at the rate of one-half gallon per square yard and then covered with sand. This work was done in October and consequently has not had much wear, but it is now very satisfactory. We hope that the gravel roads thus treated will not break up in the spring.

"In Camden county a section of the White Horse pike near Audubon is being paved with concrete only. This work was started late in the season and will have to be stopped before it is finished on account of cold weather. The location is an excellent one for a severe test of the pavement. It is the main highway between Philadelphia and Atlantic City and over it pass the farmers' heavily loaded produce wagons to their market in the city and also very heavy motor trucks, as well as touring cars and horse-drawn vehicles.

"In Gloucester county particularly good repair work is being done by the penetration method. Roads are being widened and resurfaced with stone. In resurfacing the old stone bed is scarified and raked to remove any inequalities, rolled thoroughly, then stone is spread about three inches loose measure and rolled enough to give it a uniform surface; about a gallon of asphalt binder per square yard is then applied from hand distributors, and one-quarter or one-half inch stone is spread and the whole road is then rolled thoroughly. About half a gallon of asphalt binder is then applied, more fine stone or sand is spread and the whole again thoroughly rolled. In Gloucester county their aim seems to be not how much they can do, but how well they can do it.

"In Mercer and Middlesex counties we have two patrolmen, each working continually on a section of road. I am most familiar with the Mercer county section. The section is four and one-quarter miles long and is one of the best pieces of road in the county. It is a good demonstration of the effectiveness of the patrol system.

"We are about to try convict labor on road work and while it is late in the season and we will not be able to accomplish much we hope to profit by the little experience and hope to use it advantageously in the spring.

"The experiment will be tried on the White Horse road, from White City Park to White Horse Hotel, in Mercer county. This road is not far from the State penitentiary and fifteen men and two guards will be

transported from and to the institution, morning and night. Provision has been made for serving dinner at a house on the road."

The state supervisor of roads, Robert A. Meeker, gives in his report what is believed to be the first discussion of the limitation which should be made to curvature of roads used by automobiles. This he states as follows: "A motor running at the legal rate of 25 miles per hour, travels 110 feet in three seconds, and should another travelling at the same rate be approaching from the opposite direction, the drivers would have  $1\frac{1}{2}$  seconds to avoid a collision, if the line of vision was limited to 110 feet. The department has devoted much time and thought to this problem, the result of which is that no curve of less than 955 feet radius is recommended or approved unless local conditions render it practically impossible. The reason for this is that on a 6-degree curve the clear line of vision on a roadway 30 feet wide is only 350 feet, hence the drivers of the approaching motors would have  $4\frac{3}{4}$  seconds in which to avoid one another.

"The standard cross section is the arc of a circle drawn through three points, namely, the centre and the two gutters. The latter are located at the intersection of the side lines with a line descending from the center at the rate of  $\frac{1}{2}$ -inch per foot. The arc thus obtained gives us a fall of  $\frac{1}{4}$  inch per foot from the center to the edge of a 16-foot pavement, of  $\frac{5}{8}$  inch from this edge to the center of the 7-foot shoulder, and  $9/10$  of an inch from this point to the gutter; thus increasing the grade in such a manner that the water will be most readily carried off with the least damage to the shoulder of the road, also giving a section upon which the greatest portion is convenient for traveling."

#### ROOF GARDENS FOR FIREMEN.

Bids were recently received for 15 new fire stations in New York City which included in their plans roof gardens or open air rooms for the physical exercise, comfort and pleasure of the firemen, and while the bids received have been rejected because considered excessive, it is probable that contracts will be awarded for these buildings before long. Realizing the monotony of existence in the average truck and engine house, where the men are confined to close quarters 24 hours daily when not actually engaged in fighting fires, fire commissioner Johnson decided to equip 15 of the 45 new houses which are to be begun this year with roof gardens, believing that they would contribute to the health of the men and therefore mean more efficient service to the city.

Two styles of construction have been adopted. One is a covered garden, 20 feet deep across the front of the third story of the fire house, on a level with the third floor and opening directly into the recreation rooms. The other style provides for an uncovered garden, also on a level with the third floor, but across the rear of the house, around which will be a parapet of brick 3 feet in height. The floors of both styles will be composed of dull red tiles. Sliding poles will be placed in the inside room near the doors leading to the gardens, which doors will open inward toward the poles so that the firemen can reach the first floor quickly in response to alarms. The firemen will be permitted to plant flowers and shrubs in these gardens, except that the main area must be reserved for outdoor exercise, such as the playing of handball.

All of these houses will be equipped with motor apparatus, and those in the suburban sections will have chemical "scouts," a combination of chemical engine and



hose wagon. Other new equipment which has been ordered includes 28 steam fire engines with automobile tractors; 2 high pressure automobile engines; 3 automobile hose wagons, and 26 automobile hook and ladder trucks, one with an 85-foot extension ladder, 8 with 75-foot ladders and 17 with 65-foot ladders.

#### AUTOMOBILE FIRE ENGINE.

In December engineers of the National Board of Fire Underwriters tested the fire engines of a southern city, these consisting of 7 rotary automobile engines and three steam engines. The former were all purchased in 1911; the latter in 1898, 1900 and 1904 respectively, and are held in reserve. Only three of the engines delivered 90 per cent. or over of the rated capacity, two of these being steam; the percentages of the auto engines being 79, 81, 82, 84, 87, 89 and 90 respectively. The report states that "The engines were well handled, but the engineers lack training in heavy running." The auto engines were all rated at 700 gallons; the steam engines, two at 850 and one at 1100. The net water pressures were 94, 99, 100, 116, 117, 123 and 132 respectively for the auto engines, and 88, 92 and 112 for the steam engines.

Concerning this apparatus the report of the engineers of the National Board says: "Chemical service and engine capacity are satisfactory, and the tests show the automobile pumping engines are in good condition, but somewhat overrated." Concerning durability little could be said, as the engines had been little more than a year in service. It is recommended that all autos be "provided with draw bars and steamers equipped with short poles for towing."

#### REPAIRING ASPHALT PAVEMENTS.

##### Details of Costs by Contract and by Municipal Plants in Several Large Cities.—Paving, Repaving and Repairs.

The superintendent of the Bureau of Construction of the Department of Public Works of Pittsburgh, N. S. Sprague, in December sent a circular letter to the larger cities of the country for the purpose of collecting information concerning the cost to them of constructing and repairing sheet asphalt pavement, both by contract and also by municipal plant, where one was being operated by the city. The result of this investigation is presented in the accompanying tables.

These give quite completely the details of cost of both new pavement and repaving, including the length of guarantee, thickness of binder and of top coat, and whether the concrete base and the excavation of sub-grade are included in the cost. In most cases the cost of the concrete base is given, so that comparison on a uniform basis is more or less possible.

An inspection of the table, however, indicates that even in the well established practice of asphalt pavement construction, the larger cities do not agree in their methods of receiving bids or estimating costs. For instance, while in the case of most of the cities the bids include a sufficient amount to cover five years' maintenance, Buffalo, Syracuse and Cleveland call for ten years guarantee, and their price is undoubtedly affected to an appreciable, but unknown degree by this. Again, two of the cities do not include cost of the concrete base in the paving price, while all of the rest do; and of those which do, three cities use a 5-inch base, the others a 6-inch, except Baltimore, which uses both 6 and 4. The last named city appears to furnish an indication of what difference in price might be caused by the difference in thickness of base, the difference of two inches in that

city making a difference of six cents per square yard in price; but it would appear that some unnamed factor other than thickness must be involved, since 6-inch concrete base in other cities costs 60 to 90 cents per square yard or ten to fifteen cents per square yard one inch deep.

Seven cities state that excavation of the sub-grade is included in bids, while two do not include such excavation. An extreme case is that of Buffalo, where the bids received include under one price not only base and wearing surface, but also excavating sub-grade, curb, drain tile and sometimes grading sidewalks. Such omnibus bids as those cannot be compared with bids received by other cities; in fact comparisons between different bids in the same city are almost impossible.

Of the cities included in the first table, eight reported operating municipal plants, one failed to reply to the inquiry and the others reported no plants in operation, although Chicago reported a municipal plant now being built, and the Borough of the Bronx that the purchase of a plant was contemplated.

The work done by Pittsburgh is given in more detail in a separate table.

##### COST OF WORK DONE BY PITTSBURGH MUNICIPAL ASPHALT PLANT.

Year.	Plant.	Kind.	Yardage.	Cost per sq. yd.	
				Labor and materials.	Total cost.
1910.....	{	Patching	42,254	\$0.784	\$0.951
		Resurfacing	15,602	.706	.873
1911.....	{	No. 1			
		Patching	38,871	.793	.936
	{	Contract (1)	5,851	.996	1.139
		Patching	38,198	.747	1.029
		Resurfacing	1,693	.759	1.041
1912.....	{	Contract (1)	5,760	.823	1.104
To Nov. 30, incl.		Patching	.....	.801	....
		Resurfacing	.....	.736	....

(1)—Contract work includes work done for Railways Co. and Paving Contractors for which the city is reimbursed at prices given.

We have recently been asked by several of our readers for information as to what cities have municipal asphalt plants, and have prepared the following list which, while not complete, is more so than any which we have seen. It is possible that one or two of the cities named have only small portable plants, but practically all of them have permanent plants of fair capacity. These cities are as follows:

San Francisco, Cal.; Denver, Colo.; Bluffton, Fort Wayne, Indianapolis, Ind.; Topeka, Kan.; New Orleans, La.; Detroit, Mich.; Duluth and St. Paul, Minn.; Kansas City and St. Louis, Mo.; Omaha, Neb.; Trenton, N. J.; Brooklyn, Elmira, Niagara Falls and Utica, N. Y.; Cincinnati, Cleveland, Columbus, Dayton, Toledo and Youngstown, O.; Oklahoma City, Okla.; Pittsburgh and Reading, Pa.; Fort Worth, Texas; Seattle and Spokane, Wash.; Washington, D. C., and Montreal, Winnipeg and Toronto, Canada.

Of these 34 plants, more or less complete descriptions of plant or operation, or both, of 19 of them have been given in Municipal Journal in the following issues:

Utica, N. Y., Vol. 22, P. 648; Brooklyn, N. Y., Vol. 23, P. 164, Vol. 25, P. 85, Vol. 26, P. 326; Cincinnati, O., Vol. 23, P. 485; New Orleans, La., Vol. 23, P. 517; Ft. Worth, Tex., Vol. 24, P. 74; Indianapolis, Ind., Vol. 25, P. 601, Vol. 26, P. 331, Vol. 28, P. 206; Pittsburgh, Pa., Vol. 25, P. 320; San Francisco, Cal., Vol. 25, P. 684, Vol. 26, P. 926, Vol. 27, P. 328, Vol. 29, P. 286; Winnipeg, Man., Vol. 25, P. 419, Vol. 26, P. 329; Toronto, Ont., Vol. 25, P. 573; Detroit, Mich., Vol. 26, P. 336, Vol. 28, P. 305; Seattle, Wash., Vol. 26, P. 329; Bluffton, Ind., Vol. 26, P. 329; Dayton, O., Vol. 26, P. 330; Columbus, O., Vol. 26, P. 330; Denver, Colo., Vol. 30, P. 668; St. Louis, Mo., Vol. 33, P. 759; Niagara Falls, N. Y., Vol. 33, P. 904; Montreal, Vol. 26, P. 332.

## AVERAGE COST OF SHEET ASPHALT PAVEMENTS AND REPAIRS IN CERTAIN CITIES.

DATA SECURED IN REPLY TO CIRCULAR LETTER OF DECEMBER 1912.

By BUREAU OF CONSTRUCTION, DEPT. OF PUBLIC WORKS, PITTSBURG, PA.

City.	CONTRACT WORK										Repaving—						Resurfacing	
	New Pavements.					Original Improvements					Work included in price						Average price per sq. yd.	Length of guarantee, years.
	Average price per sq. yd.	Length of guarantee, years.	Concrete Included.	Base Thick-ness, ins.	Binder thick-ness, ins.	Top coat thick-ness, ins.	Is ex-cav. of sub-grade includ.?	Average price per sq. yd.	Length of guarantee, years.	Is removal of old pavements included?	Is con-crete base included in price?	Thick-ness of concrete base, ins.	Thick-ness of binder, ins.	Thick-ness of top coat, ins.	Average price per sq. yd.	Length of guarantee, years.		
Boro. of Manhat-tan, New York, N. Y.....	\$2.60	5	Yes	6	+	+	+	\$2.85	5	Yes	Yes	6	+	+	\$1.23 <sup>1</sup>	+		
Boro. of Queens, New York, N. Y.	2.19 <sup>2</sup>	5	Yes	5	+	+	+	1.12	5	Yes	+	+	+	+	+	+		
Philadelphia, Pa.	1.32 <sup>3</sup>	5	No	6	+	+	Yes	1.32	5	Yes	No	6	+	+	1.15	5		
Boro. of Brook-lyn, New York, N. Y.....	1.73 <sup>4</sup>	5	?	5	1	2	Yes	1.83	5	Yes	Yes	5	1	2	.88 <sup>4</sup>	None		
Baltimore, Md...	1.69 <sup>5</sup>	5	Yes	6	1½	2	No	1.73 <sup>5</sup>	5	Yes	+	+	+	+	1.13	5		
	1.63	5	Yes	4	1½	2	No											
Detroit, Mich....	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Borough of the Bronx, New York, N. Y....	1.49 <sup>7</sup>	5	No <sup>7</sup>	6	1	2	Yes	1.43 <sup>8</sup>	5	Yes	No <sup>8</sup>	6	+	+	No contracts			
	2.20 <sup>9</sup>							2.27 <sup>10</sup>			Yes	5	1	+	1.31 <sup>8</sup>	+		
	3.13 <sup>12</sup>							2.70 <sup>11</sup>			Yes	5	1	+	1.42 <sup>10</sup>	+		
Buffalo, N. Y....	3.26 <sup>11</sup>	10	Yes	6	1½	2	Yes	2.70 <sup>11</sup>	10	Yes	10	+	1½	2	2.75 <sup>12</sup>	10		
	13							2.75 <sup>12</sup>							2.43 <sup>11</sup>			
Cincinnati, Ohio.	2.50	5	Yes	6	1½	1½	9 <sup>11</sup> Yes	+	+	+	+	+	+	+	1.50	5		
Syracuse, N. Y..	2.14 <sup>17</sup>	10	Yes	6	+	+	Yes	+	+	+	+	+	+	+	1.30 <sup>17</sup>	10		
	2.39 <sup>18</sup>														1.35 <sup>18</sup>			
Cleveland, Ohio..	2.06	10	Yes	6	+	+	+	+	+	+	+	+	+	+	1.45	5		
	1910														1911			
Chicago, Ill.....	1.80	5½ <sup>19</sup>	Yes	6	+	+	+	+	5½						No late contracts.			
Kansas City, Mo.	1.90	5	Yes	5	1½	1½	Yes	+							1.48 <sup>20</sup>	5		
Washington, D. C.....	1.77	5	Yes	6	2	2½ <sup>21</sup>	..	1.68	5	No <sup>22</sup>					.75 <sup>24</sup>			
	1913																	
New Orleans, La.	+	+	+	+	+	+	+	1.50	+	+	+	+	+	+	1.50			
								to							to			
								1.60 <sup>25</sup>	+	+	No	+	+	+	1.60 <sup>25</sup>	+		
Pittsburgh, Pa.	2.36 <sup>27</sup>	5	Yes	6	1	2	No	2.53	5	Yes	Yes	6	1	2				
	2.14 <sup>28</sup>	5	Yes	6	1	2	No	2.21	5	Yes	Yes	6	1	2				
	2.20 <sup>29</sup>	5	Yes	6	1	2	No	2.25	5	Yes	Yes	6	1	2				
Newark, N. J....	+	+	+	+	+	+	+	+	+	+	+	+	+	+	1.15 <sup>30</sup>	+		

+Data not given in reply. <sup>1</sup>Extra concrete, \$7.40 per cu. yd. <sup>2</sup>Average price for from 5 to 8 years ago. No sheet asphalt work being done at present. <sup>3</sup>Average price concrete base is \$4.50 per cu. yd., or \$0.75 per sq. yd. <sup>4</sup>Lutz heaters used. <sup>5</sup>Removing old pavements included. <sup>6</sup>1912 prices higher—as high as \$1.85 per sq. yd., varying with haul. <sup>7</sup>Average cost of concrete base, \$5.36 per cu. yd. <sup>8</sup>Average cost of concrete base, \$5.30 per cu. yd. <sup>9</sup>Contract April, 1912. <sup>10</sup>Contract let October, 1912. <sup>11</sup>Average price 1912. <sup>12</sup>Average price 1911. <sup>13</sup>Price includes base, curb, excavation, drain tile, and sometimes grading side-walks; i. e., lump sum price. <sup>14</sup>Includes furnishing new or redressing old curb. New curb often required. <sup>15</sup>As preceding and also minor repairs to base. <sup>16</sup>Where required. <sup>17</sup>Average of 1912 to Oct. 28. <sup>18</sup>Average of last bids 1912. <sup>19</sup>Five years from July 1 following acceptance. <sup>20</sup>Asphaltic concrete 2 ins. thick, no binder. <sup>21</sup>Before compression. <sup>22</sup>Removing old surface 12c. per sq. yd. Removing old base \$1 to \$1.85 per sq. yd. <sup>23</sup>By heater method—surfacing. Minor repairs and patching 57c. per cu. ft. for surface; 43c. per cu. ft. for binder. <sup>24</sup>Costs before asphalt plant was operated; i. e., up to 1907, did not include concrete base where required. <sup>25</sup>1909. <sup>26</sup>1910. <sup>27</sup>1911. <sup>28</sup>Annual contract. Patching by annual contract \$1.19 per sq. yd.

## MUNICIPAL PLANT WORK.

Has city a municipal asphalt plant now in operation?	(Average costs per sq. yd.)		Repaving.	Resurfacing.	Patching. Do costs include all overhead charges, depreciation, interest, etc.	Remarks relating to work done by Municipal Asphalt Plant.
	New pavements or original improvements.	Resurfacing.				
Boro. of Brooklyn, New York, N. Y..	Yes	Not done	Not done	(1).76	(2)cu. ft. basis	Yes
Detroit, Mich. ....	Yes	(A).85 (B) (1) 1.03	(A).85 (B) (1) 1.03	(A).93 (B) 1.12	(A).97	Yes
Cincinnati, O.....	Yes	Not done	....	(1)1.20	(2)1.15	Yes
Cleveland, O. ....	Yes	Not done	Not done	Not done	(1).82	No
Kansas City, Mo....	Yes	(1)1.67	Not much done	(2)	1.00	No
Washington, D. C....	Yes	+	+	+	+	+
New Orleans, La....	Yes	....	....	....	(1)1.43 (2)1.14	Yes

(1) Resurfacing with Lutz heaters in 1911.—Cost includes fixed charges, supervision repairs, labor and materials, and rental of heater.

(2) Wearing surface \$0.56 per cu. ft., binder \$0.45 per cu. ft.—for 1911—includes all charges as in (1) except rental of heater.

(A) Costs for 8 years, 1904-11, incl.—Costs include all charges except maintenance; net costs. (B) Including maintenance. (1) Costs include asphalt work only and are exclusive of base. Estimated saving to city due to plant, given as \$205,000 for the 8 years' operation—see report.

(1) Resurfacing over old brick pavements.

(2) Includes 5% depreciation charge.

(1) Cost for 1912 includes labor and material only—no overhead charges.

(1) Little of this work done—cost given is actual cost of one job, specifications as for contract work, including concrete base.

(2) Surfacing old brick pavements with 2-in. sheet asphalt—  
asphaltic cement instead of binder cost \$0.85 per sq. yd.

Municipal plant recently installed for repairs only. Cost of work not determined.

(1) Cost for year ending Aug. 31, 1909. Cost of maintenance of all sheet asphalt pavements laid per sq. yd. as follows: 1907—\$0.1144; 1908—\$0.078; 1909—\$0.0574.

(2) Cost in 1908.



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## CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

JANUARY 30, 1913.

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## Auto Trucks for Municipal Work.

We believe that less than six years has elapsed since the first use of automobiles by municipalities; and to what extent the fire departments have adopted auto apparatus is shown by the tables in our special Fire numbers, and by the fact that several manufacturers of horse drawn apparatus are now perforce required to furnish auto apparatus or go out of business.

The auto truck has not been so rapidly adopted by municipal departments, and it is questionable whether it will be except in the large cities. As stated by us in an editorial a year ago, long hauls of heavy material in continuous service is the work for which such trucks are specially adapted, and this is generally found only in the street, water, sewer and perhaps some other departments of the large cities. It is so seldom that these departments in the smaller cities have materials to deliver which can not be carried in the superintendent's buggy or runabout, that it is cheaper to hire such carting done.

But in the larger cities the auto truck will undoubtedly supplant the horse drawn in municipal work, as it is doing in private business. Two or three years ago the auto-truck was regarded as a promising possibility; the automobile show of last week, which is described in another column, made it apparent that it was already

firmly established as a success. In fact, this was not even argued or questioned it was assumed to be generally accepted, and the only question was as to details of construction.

The variety of purposes for which auto trucks can profitably be used has led to a development different from that of the pleasure vehicle in at least one respect—that the chassis and body are considered as two separate items, each of which may vary independently of the other within certain limits. Thus a manufacturer turns out a standard five-ton chassis, to which may be fitted a coal wagon body with chutes, a dumping body for carrying sand or stone or a removable body which can be loaded or unloaded at leisure after the chassis has departed with another body. In fact, some municipal departments have bought the chassis only and had a body made in local shops after their own designs.

And herein lies a possibility of development along lines of economy; for a water department, for instance, may have one chassis fitted with several bodies, using whichever one is needed at the time. These may include a motor hoist such as was described in our January 16 issue (which could be adapted for loading and carrying pipe also); a dumping body for hauling broken stone when repairing macadam paving over trenches, or for removing surplus dirt, etc. In fact, any service requiring heavy hauling can now be readily accommodated with trucks and bodies adapted to it.

## Uniformity of Paving Brick.

January 24, 1913.

Editor Municipal Journal,  
50 Union Square, New York, N. Y.

Dear Sir:

Your issue of the 23d inst. contained, on page 125, an interesting editorial on "The Uniformity of Paving Brick." In it you say, at the top of the second column, that:

"When a number of bricks are put through the standard rattler test and their average abrasion loss alone is considered, it is quite possible that there should be a variation of ten or even fifteen points between two bricks in the same charge."

If you will refer to the printed reports of the Maryland Geological and Economic Survey, wherein the results of nearly 1,000 brick tests are listed, you will note that your statement above quoted is at least conservative. Below are a few of the results from these tests:

No. of Test.	Percentage Loss in Rattler.		
	Low.	High.	Average.
302.....	16	44	25
312.....	22	27	24
330.....	22	53	34
334.....	17	56	25
355.....	19	24	22
378.....	17	45	31
380.....	19	23	21
420.....	12	30	18
427.....	10	28	18
428.....	11	30	19
450.....	16	31	22
459.....	11	32	20
461.....	13	31	19
471.....	18	21	19
516.....	17	34	20
518.....	15	31	21
529.....	14	30	19
543.....	11	39	19
545.....	15	69	40
566.....	14	39	22
588.....	12	34	22
672.....	15	36	19
678.....	12	34	20
680.....	14	38	18
699.....	16	34	21
709.....	11	33	18
717.....	13	34	22
719.....	19	23	21
873.....	18	23	21

A study of the above will show how little the average may mean, and why the writer has for years insisted that the records of the individual brick be obtained and the lot of brick judged accordingly.

He was fully aware of the opposition from the manufacturers to a clause in the specifications limiting the range of the percentages of loss in the rattler, and it was with this in mind that he established the maximum range as ten points with the idea of gradually reducing this range to, say, six points as the novelty of the clause wore off and as the manufacturers accustomed themselves to furnishing more uniform brick. The writer believes that considerable of the non-uniformity in the brick as originally supplied under an "average" rattler test, comes from insufficient care in selecting the brick after they have been burned, and that, were greater care taken in segregating the brick varying in toughness, correspondingly greater uniformity would be secured. Then, as the writer suggested in his letter to you published under date of January 2, it would seem, as there stated, "that a considerably higher loss than usually specified can be allowed in the rattler, provided departures from the average by the individual brick can be correspondingly reduced," and in this way the softer or less tough grades of the brick utilized to advantage where local conditions so warrant.

Very respectfully,

W. W. Crosby.

### PAVING AT HOLLAND, MICHIGAN.

In our issue of December 12 appeared an article entitled "Municipal Paving in Holland," in which were given some figures of the cost of laying bituminous top pavement by the city by day labor. An anonymous correspondent questioned these figures, and while ordinarily we pay no attention to letters whose authors do not sign their names, we considered it our duty to our readers generally to rectify any error which might have been made. The communication referred to gave the following calculation for concrete base:

Estimate of mixture 1:3:7:

0.84 yds. of gravel at \$1.20 = \$1.008

0.38 yds. of sand at .90 = 0.342

0.89 yds. of cement at 1.17 = 1.041

total \$2.39 per cubic yard, or 39.8 cents per square yard 6 inches thick. Allowing 3 cents per square yard for the use of a machine would give a total cost of 42.8 cents, without any allowance for labor. The article stated that the total cost was 41.2 cents.

In explanation of the original figures, city engineer Naberhuis says: "The total amount paid for cement, gravel and labor were summed up and divided by the number of square yards laid, and this was called the cost of concrete per yard, and amounted to 41.2 cents. The 6 cents per square yard which went for the use of the machine was charged to the asphalt top alone for the following reason: One machine can lay three times as many yards of concrete as of top, and the machine not being subjected to great heat, it is only half as hard on the machine; this would make one-sixth of the wear on the concrete; or, if this had been charged, would have amounted to 1 cent per square yard.

"There is no 15 per cent. shrinkage in gravel when the wagons are loaded two miles from the place where they are dumped, and are required to measure the proper amount after hauling two miles. When I gave you the price of gravel, I should have been a little more explicit. For half of the gravel used we paid \$1.75 per load of a yard and a half, or \$1.166 per yard; for the other half we paid \$1.08 per yard (these being the two grades of gravel used) which makes an average of \$1.123 per yard. A yard of the mixed gravel makes a yard of concrete and cost \$1.123; nine-tenths of a barrel of cement at \$1.17 is \$1.053, the two totaling \$2.176 per cubic yard, or 36.2 cents per square yard. Labor cost at 5 cents per yard makes a total of 41.2 cents per square yard."

This leaves nothing for incidentals, but Mr. Naberhuis states that these were balanced by the fact that old cross walks and curbs which were taken up were broken up for the concrete at a less cost than the gravel, thus in-

roducing some saving. Also the excavating had been done by contract, and as the contractor was allowed a leeway of ½ inch either way from the theoretical depth, it is natural to suppose that the variation was more in his favor than otherwise and that, therefore, the concrete base, whose top surface was set to the predetermined grade, averaged a little less than 6 inches thick.

For the 2 inches of asphaltic concrete top, Mr. Naberhuis gives the following calculation: One yard of stone at \$1.20 and hauling at 18 cents equals \$1.38 per cubic yard. Four-tenths of a cubic yard of sand delivered at 90 cents equals 36 cents, a total of \$1.74. For two inches or one-eighteenth of a yard, this would give 9.7 cents per square yard. Asphalt per square yard, 20.2 cents; machine rent, 6 cents; labor cost, 8 cents; making a total of 43.9 cents per square yard, which leaves 10.3 cents for fuel and incidentals from a total of 54.2 cents per square yard. As the average amount laid was 450 yards per day, this would give \$46.35 per day for fuel and incidentals.

These calculations are given to show that the figures of 41.2 for base and 54.2 for top were possible; but, as stated above, the figures given were actually obtained by dividing the total cost by the amount of work done.

### SEPTIC TANK PATENTS.

The United States Supreme Court last week handed down a decision in the case of the Cameron Septic Tank Co. against the city of Knoxville, Ia., which supports the contention of the city that the patents of that company expired a little over three years ago. In our issue of July 6, 1910, we explained briefly that the so-called Treaty of Brussels provided for the expiration of a patent in each country independent of the time it expired in other countries; but that it was a question whether this applied to patents which had been taken out before this treaty was entered into, among which would be included the septic tank patent. The Supreme Court has decided that the treaty does not apply to patents previously taken out, and that consequently any patent taken out by the Septic Tank Co. in this country, which had previously been taken out in England, expired with the expiration of the English patent in 1909.

This decision is not admitted by the Cameron Septic Tank Co. of Chicago as settling the matter, as it claims that the English patent is a patent for the apparatus, while the American patent was held by the Saratoga decision to be a process patent; that the two patents are therefore entirely distinct and that the expiration of the English patent has no bearing upon the life of the American patent. In the Knoxville case, this company agreed to a stipulation that the two patents should be considered identical so far as that case was concerned, but claims that this stipulation was granted merely to obtain a decision on this point, and will have no effect on litigation with other cities.

Those who are opposed to the septic tank patents in this country, however, claim that the patent is the same as the English patent, although it has been differently interpreted by our courts; and that the status of the American patent which was agreed to in the Knoxville stipulation will be established by the courts as applying to any other case or cases.

To the layman it would appear as though this were at least a step, and quite an important one, towards the final solution of this question which has so long annoyed sewerage engineers in this country. It is hoped that the final decision will be reached before the time when the company admits that its American patent will expire—a little less than four years hence.



## NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance.

### ROADS AND PAVEMENTS

#### Five Miles of Streets Laid.

Reno, Nev.—The report of the city engineer for 1912 shows that during the year five miles of streets were built and that several miles of sidewalks and curbs have been constructed. More work has been planned for this year.

#### Paving to Commence in Gainesville.

Gainesville, Fla.—The first carload of brick has been received for the paving of Gainesville's principal thoroughfares. The actual work of laying brick will begin within the next few days. The curbing—or a greater part of it—has been placed in position, and the contractors, the Georgia Engineering Company of Augusta, will place a large force at work, and will push the job as rapidly as possible. The contract is an extensive one, involving in the aggregate \$105,000. The streets to be paved are West Main from Boundary to the junction of the A. C. L. and Seaboard Air Line railroads, Virginia avenue from the Seaboard depot to University avenue, Pleasure street from Union to Church, Magnolia, Garden, Mechanic and other streets. When the work is completed, Gainesville will be one of the best paved cities of its size in the country, which will prove a great advertisement.

#### County Spends Over \$100,000 on Roads.

Salt Lake City, Utah.—During the year 1912 Salt Lake county spent \$127,029.96 on roads, bridges and lights for the benefit of residents of the county. Improvements were made in every section. The annual report of Willard Snow, supervisor of roads for the county, shows that a total of \$116,308.16 was spent on roads and bridges, and \$10,721.80 on lights along county highways. Also \$6,000 was appropriated by the state and county and used on state highways. The total cost of sprinkling roads was \$12,285.10.

#### Donates \$150,000 for Road.

Toledo, O.—The cause of good roads has just received a substantial boost from John N. Willys, president of the Willys-Overland Company, of Toledo, who has contributed the sum of \$150,000 to the fund being raised by the prominent men in the automobile industry, created for the purpose of building a national transcontinental highway from New York to San Francisco. Mr. Willys's donation is to be divided into three yearly instalments of \$50,000 each. The Willys company, which produces the Overland, will turn out 40,000 automobiles this year, many of whose owners will benefit by Mr. Willys's liberal gift. The national highway project itself is receiving ever-increasing attention. It involves the building of two thousand miles of rock road, while for the remainder of the distance existing roads are to be utilized, with improvements where they are required. The project provides for co-operation with local, state and federal authorities.

#### Twenty-seven Concrete Bridges Built in 1912.

Knoxville, Tenn.—Twenty-seven concrete bridges were constructed in Knox county during the year 1912, of such material that they are expected to be of practically permanent durability. If the concrete bridge building record is maintained for a few years, Knox county will be equipped with durable bridges in every part of the county, and have bridges second to none in any county in the south. The largest concrete structure erected in 1912 is that leading from Rutledge pike to Mascot, near the property of the American Zinc Company. The bridge is 32 feet high and is 148 feet in length. It crosses Roseberry creek, and was built at a cost of about \$6,000. It is the policy of the pike commission on the pikes to remove the wooden boxes and place in concrete boxes, which is greatly reducing the cost of repairs.

#### Boulevard Paving Progressing.

Pittsburgh, Pa.—Finishing touches are being put on the paving of Oliver avenue, Grant street, Webster avenue, and the Grant Boulevard extension, so that the entire new thoroughfare to the downtown section, from the boulevard, can be opened within a short time. In the accompanying picture is shown the temporary wooden incline that will



Courtesy Pittsburg Dispatch.

#### TEMPORARY INCLINE OVER SIXTH AVENUE.

carry Webster avenue across Sixth avenue, the latter remaining at the original grade until next spring, when the last half of the "Hump" contract is completed. Traffic will be allowed to use all the streets completed as soon as the paving is declared ready for service and the inclines finished.

#### Will Double the Street Paving Record in 1913.

Fort Smith, Ark.—"We expect to more than double the record this year," said Chief Engineer Myers, of Paving District No. 5, in speaking of the progress being made with the paving of the streets of Fort Smith. As the concreting force was not put on until the latter part of the year, this can easily be accomplished if the property owners will put down curb and gutter and have the streets ready for the paving crew. The addition to the paved streets last year was 11.3 miles, and as upwards of 40 miles of the 71 miles has already been laid, and this includes all the wide streets, a doubling of the amount will practically clean up the paving contract this year. This can easily be accomplished if the work is not interrupted by weather or other causes.

#### Paving New to Schenectady to Replace Blocks.

Schenectady, N. Y.—A method of paving new to Schenectady will be followed this spring in resurfacing part of lower State street and the streets on both sides of Crescent Park. The method, similar to the Hassam method, by which stones are set in concrete, will consist of breaking in two the old granite paving blocks, embedding their worn ends in concrete, their squared ends presenting a sharp surface. The whole will then be grouted, cement being poured into the depressions. This will leave a surface with a good foothold for horses on the inclines. The inclines on lower State street will be paved in this manner, but the remainder will have sheet asphalt paving. The old granite blocks may be used as a base for the asphalt surface. However, Charles A. Mullen, commissioner of public works, is opposed to covering up the granite blocks in this last-named fashion. What blocks aren't needed for

the semi-Hassam pavement can be carted away to a vacant lot, Mr. Mullen said, and kept for future use on hilly streets. The blocks are said to be worth \$1.50 or \$2 per square yard. If the Hassam method itself were used the city would be forced to pay a royalty. Mr. Mullen believes the granite blocks can be broken up so as to present a smooth surface, embedded in concrete and the street graded, the whole operation not to cost more than \$1.50 per square yard. He paved Michigan and East Water streets, Milwaukee, the same way. The blocks on State street were laid 17 years ago. They are now very rough. Residents have repeatedly asked for an improvement.

#### Improvements at Eastland.

Eastland, Tex.—Work has been contracted for and is now being done by the city and property owners in the way of paving, building concrete walks and installing of heavy galvanized iron and cement road culverts along the main streets and alleys running south four blocks from the depot to the mineral well and then east four blocks from the post office to the campus of the public school building.

#### Resurfacing Pavement Laid Last Summer.

El Paso, Tex.—Montana street is being resurfaced from Cotton avenue to Piedras street with two inches of asphalt at a cost of between \$6,000 and \$8,000. The Southwestern Paving Company, which laid the pavement last summer, is doing the work. The plan which has been followed so far is to resurface the north side of the street and leave the south side open for traffic. However, this is to be changed, according to Dr. J. B. Brady, president of the Southwestern Paving Company. Discussing the improvement he said: "In future we will resurface one block at a time, closing the whole block to traffic while this is being done. It will be necessary only to remove the asphalt surface, which is two inches deep, and replace it with better asphalt and new stone. We had been ordered to use California asphalt and, as it was received in hot weather and no test made, we could not tell that it was not as good as it was supposed to be."

#### Mitchell City Improvements.

Mitchell, S. D.—The annual review of the improvements made in the city during the past year have been summarized according to public and private work, and the showing places Mitchell on a firmer basis than for several years. In the matter of public improvements the city council spent \$77,989 in the laying of the concrete paving, and the installation of the cluster lights, including water mains and sewers. In the residence district about forty new residences were erected, amounting in the aggregate to \$120,000, bringing the total up to \$574,989. It is expected that more street paving will be accomplished this year, which will extend into the residence districts, applications having been made for this extension of the work.

#### Report of Tacoma's Paved Streets for Last Year.

Tacoma, Wash.—The city of Tacoma paved 8.21 miles of city streets, graded 5.53 miles and laid 9.01 miles of cement sidewalks during the year 1912, according to the annual report issued by City Engineer W. C. Raleigh. In addition to this, 12.44 miles of sanitary sewers and 4.26 miles of storm sewers were constructed during the year. The cost of paving work in 1912 amounted to \$348,421.20, and the cost of sidewalks to \$74,114.85, while the cost of storm sewer construction amounted to \$46,707.50. In addition to this amount of work, the city had under construction at the end of 1912 7.63 miles of paving, 5.10 miles of grading and 9.28 miles of cement sidewalks, the cost of paving under construction being \$251,310.80 and the cost of sidewalks being \$80,233.50. The vigorous campaign for the laying of cement walks, which is said to be due to the large number of damage suits in which the city has become involved, is seen in the amount of work under construction at the present time, which exceeds the amount completed during 1912 by .27 of a mile, the cost of work under construction being \$6,118.45 more than the cost of the work completed during the past

year. Asphalt is by far the most generally used of the various classes of paving, the number of miles of this material being 4.24, while 6.82 are under construction at the present time. The only other classes of paving under construction are brick, of which .23 is being laid; creosoted wood, which is responsible for .45 of the total, and plank, of which .33 of a mile is being put down at the present time. The total mileage of paved city streets at the present time is 93.21, of which 62.86 are asphalt, 8.72 are sandstone and 8.07 are brick. There are 9.53 miles of plank road and 2.13 miles of concrete paving, the balance of the streets being small stretches of bituminous macadam, granitoid, bitulithic, untreated wood and macadam, neither kind exceeding a mile in length. By superficial measurement there are 166,177 square yards under construction, while 120,827 square yards were laid during 1912. The number of miles of graded streets at the end of last year amounted to 226.34, and 5.10 miles were under construction at that time. The total mileage of cement sidewalks on December 31, 1912, was 314.36, of which 9.01 miles were laid during the year.

#### City Engineer Submits Report.

Niagara Falls, N. Y.—Never in the history of the city has there been so many miles of paving laid as during the past year. City Engineer Parkhurst in his annual report to the board of public works, shows that more than 5½ miles of roads, over one-eighth of the total mileage of pavements in this city, were improved in 1912, at a cost of \$309,575.19. Niagara Falls now has almost 42 miles of paving. Almost three miles of sewers were laid last year, the total cost was \$26,114. In all there are about 80 miles of sewers in the city. The maintenance crew flushed over 68 miles of sewer, and cleaned 6,410 catch basins. Engineer Parkhurst makes several changes. He recommends that in the future the property owners on street to be paved should choose the kind of pavement desired before bids are received by the board. He also recommends that circus licenses be increased because the heavy wagons wear out the pavements. Engineer Parkhurst attributes the bad condition of Pine avenue to the driving of heavy circus wagons.

#### Convicts on Roads Do Good Work in Georgia.

Atlanta, Ga.—The estimated increase in public road mileage in Georgia, during 1912, will soon be definitely known, and will be of national interest because of the fact that many other states are watching the outcome of Georgia's present convict system. In 1911, there was an increase of 1,704 miles of public roads in Georgia over 1909, and figures will show that between 500 and 1,000 miles of new road have been built during 1912. Within the past three years very rapid progress has been made in road building in Georgia, and the new convict system is generally accredited as being the cause. Of the 146 counties of the state, 116 employ convicts; 30 use statute or hired labor; the total number of convicts employed is 4,744. The work done for the state by the convicts during 1911 is estimated at \$1,623,200, and the estimate for 1912 will go over that amount. In comparing the total road mileage of Georgia with the total estimated road expenditures it will be seen that each mile of public road cost last year \$49.15, or \$1.58 per inhabitant, based on the census of 1910.

#### Paving Season of 1913 Begins in Rome.

Rome, Ga.—The Southern Asphalt & Construction Co., Birmingham, Ala., has commenced paving Fourth avenue, the contract for which with East Fourth street and Avenue A, was let to them by the city council before Christmas. The contract calls for sheet asphalt as the material to be used on each street, and the time limit, barring providential hindrances, is May 1, after which the city may exact penalty for each day the work remains unfinished. After the work on Fourth avenue and East Fourth street has been done, Avenue A will be started. This will be paved to West Eleventh street. On Fourth avenue, between East First and East Second street, a parkway will be built in the middle of the street, which will be kept by the city and will, it is believed enhance the beauty of the thoroughfare.



**Lincoln Road May Lose.**

Washington, D. C.—Advocates of Representative Daniel Lafean's bill to build a broad boulevard from Washington to the battlefield of Gettysburg as a memorial to Lincoln, rather than have the Lincoln memorial take the form of a \$2,000,000 white marble edifice beside the Potomac in Washington, have been stirred into fresh activity by the prospect that the latter proposition may receive the final sanction of Congress next week. Recent appeals of Senator Cullom, of Illinois, to members of the House in behalf of the proposed marble monument in Washington as against the Gettysburg boulevard have been quite effective, and many members formerly favorable to the Lafean bill have indicated a purpose to yield to the request of Senator Cullom that they support the monument plan, which the venerable Illinois Senator wants to have sanctioned by law before he quits public life for good on March 4. Representative Borland, of Missouri, is leading the fight for the Lafean bill, and he claims he will have votes enough in the House when the monument plan bill comes up for final action to prevent its passage.

**Favors Building Permanent Road Between Cities.**

Ogden, Utah.—The building of a permanent road between Ogden and Salt Lake, recommended by the state road commission in its annual report, is considered by prominent men of this city the correct solution of the coast to coast highway problem. With a macadam road connecting the two cities, it matters little where the transcontinental road enters the state. "The recommendation will call for an appropriation of \$3,600 for each of the three counties in which the road will be built, Salt Lake, Davis and Weber," said Secretary of State-elect David Mattson, "and the counties would have to raise the rest. The road will pass through the entire length of Davis county and they will have to furnish the greatest part of the expense, which can be done by bonding the county. Salt Lake county needs but three miles of road building to the Davis county line. Of the seven miles in Weber county there need be built only about four miles of road. Davis county will have a stretch of twenty-six miles to build. A macadam road would cost \$210,000 and all of the rock would have to be hauled from Ogden canyon, while a concrete road would cost about \$230,000 and the gravel and sand could be obtained along the side of the road. I think the northern route around the lake is the most logical way for the transcontinental auto road, for the counties in the north are making arrangements to build a road from Utah Hot Springs to the Nevada line. For this road Box Elder county has with its bonding, state appropriation and five miles road tax raised \$250,000."

**Money Is Saved on Paving Work.**

Spokane, Wash.—Maintenance of city pavements by the city's own crews, under Paving Foreman F. M. Hiatt, saved the municipality \$7,039.26 during 1912 under what the cost would have been with the old contract system, according to the foreman's report, made public by Commissioner Coates. It cost \$14,353 to maintain the city's pavements for the year. The work included repairing, which would have been done under the old pavement maintenance contracts canceled by Commissioner Coates and providing for an expenditure to contractors of \$12,973.57 annually, and work of repairing the following kinds of pavements on which maintenance contracts had expired, which, under the contract system, would have cost as follows: Brick, \$357; basalt blocks, \$281.60; concrete, \$350.24; asphalt, \$7,430.08. The total cost under the old system would, therefore, have been \$21,392.49. With a \$4,000 revolving fund as capital, the report shows that Foreman Hiatt constructed \$13,940.14 worth of sidewalks and repairs. Of this \$13,536.01 was paid for by the property benefited, leaving the revolving fund practically intact for the beginning of operations during the new year. With a fund of \$21,350, appropriated for maintaining city streets, but used also as a revolving fund for financing paving repairs done for street car companies and others, the paving foreman did \$64,567.71 worth of work for private persons, firms or individuals, for which the city was paid \$67,516.67.

**SEWERAGE AND SANITATION****State Board Plans Prevention Measures.**

Sacramento, Calif.—A program of preventive measures outlined by the State Board of Health will be introduced in both houses of the Legislature, according to former Senator Louis H. Roseberry of Santa Barbara, attorney for the board. The board wishes laws providing: Jurisdiction over pollution of salt water; jurisdiction over proposed water supplies for cities. San Jose, Petaluma and Los Angeles, the board reports, all pollute salt water with their sewage, and that from San Jose is said to harm the Alviso oyster beds.

**Sewer System in Operation.**

Beverly, N. J.—Beverly's new system was put in operation under direction of Councilman George W. Addis, chairman of the sewerage commission, which supervised the erection of the plant. With seven and a half miles of mains and 14 miles of laterals, running into every property in the city limits, the system has cost \$36,000 and is pronounced by engineers to be one of the best and cheapest in the state. Cheap rates are assured property owners by the sewer ordinance, which levies a small assessment against all properties to redeem 30-year bonds. The rates are said to be 50 per cent. less than from corporation-owned plants in adjacent cities.

**Thinks Health Laws Too Rigid.**

Lawrenceburg, Ind.—Dr. Francis M. Mueller has resigned as secretary of the city board of health, because of the rigid health laws, which are unpopular. The law requiring the banishment of public drinking cups has caused bitter feeling. One hundred and fifty-seven public pumps, which have been kept by the city for almost a century and from which two and three tin cups have dangled at the end of a small chain, are cupless. Some people quench their thirst by drinking from their hands. Others hide tin cans, old bottles, coffee cups and glasses near the pumps. The city officials destroy these drinking vessels when they find them. A drinking cup war is declared.

**WATER SUPPLY****Vallejo Forced to Find Water Supply.**

Suisun, Calif.—The city commissioners of Vallejo are having an electric pumping plant installed in Green Valley near Cordelia, for the purpose of pumping water from the creek for use of the city. The reservoirs of the city system are practically empty, owing to the lack of rain. For some weeks past the city has been obtaining its principal supply of water from Lake Chabot, but this supply will last only a short time longer.

**Superintendent Advises Meters On All Taps.**

Salt Lake City, Utah.—Urging the necessity of immediately adopting a permanent plan of water supply, developing and carrying it out, conservation of all supply now possessed, prevention of waste, installation of reserve supply facilities for emergencies, improvement of the distribution system, construction of a secondary system for fire, street sprinkling and sewer flushing service and the sale of all water by meter, Superintendent C. F. Barrett of the waterworks department has submitted his annual report to the commissioner of waterworks. The recommendation which is probably of most direct interest to the water consumer is that of installation of meters on all the system. Mr. Barrett sees in the lack of meters the principal cause for waste of water and resultant shortage. He shows that of about 17,600 taps in the city, 800 are metered. Practically one-third the total revenue of the water department comes from the metered service, which consumes only about one-fifth the water, says the report. In regard to metering the entire system, Mr. Barrett says in part: "In my opinion there is only one just and equitable method for the sale of water, namely, by measure, whereby the consumer actually pays for what he uses, just as

he would pay for any other article of daily necessity in proportion to its use, as for instance gas and electricity, which are both metered to the consumer." Mr. Barrett calls attention to the destruction to water pipes by electrolysis and urges that steps be taken to avoid this damage. He urges that the department be provided with two auto trucks for the hauling of iron piping for water main extension work. He also recommends a small auto runabout for the foreman of the division of canals and water-sheds. The superintendent shows that during the year the department laid its own water mains to the extent of 40,148 feet, at a saving of 25 per cent., of which 7 per cent. was due to reduced freight rates, 2 per cent. to reduced cost of pipes and 16 per cent. due to saving in the work done by the department. The 25 per cent. saving amounts to \$14,354.83. All of the work was done by American citizens. Total expenditures for the year amounted to \$150,452.22. The net cost of running the department was \$102,216.75, allowing credit for improvements, plant, equipments, etc. The collectible total of flat and meter assessments for the current year is \$283,731.99.

#### The City Backs Meters.

Bucklin, Kan.—When the new waterworks is put in operation in the near future the city government will bet any water consumer the time of its employees against \$2 that the meters do not cheat. The waterworks ordinance recently passed, provides that when a consumer thinks his bill is high he shall put up \$2 with the city treasurer. City employees will then test the meter. If it is correct the city keeps the money. If incorrect the consumer gets the money back and a new meter free of charge.

#### Municipal Waterworks Issues Order for Year.

Appleton, Wis.—During the past year the municipal waterworks has paid out of its earnings the following amounts: To city in lieu of taxes, \$5,057.15; attorney fees for litigation on getting the plant, etc., \$1,616.92; for pavement taxes, \$1,400; improvement at plant, \$1,200; laid 6-inch main in the blocks, about \$700, in addition to 1,200 feet of small main. In addition to laying the main old connections were replaced free of charge including goose necks which were put in at a cost of \$2 each exclusive of the work required to install them.

#### Gains Shown by Water Report.

Rahway, N. J.—Splendid progress along all lines was shown in the annual report of Superintendent A. F. Kirstein at the meeting of the board of water commissioners. The report showed that 21.5 miles of pipes are now used in the distribution of water throughout the city, over a mile of which was added during the past year. The number of permits to tap the mains issued during the past year was 86, bringing the total number up to 1,789. There were also 84 extension permits during the year, making the number of new and extension permits greater than in any previous year. Besides this enlargement of the system a new Snow pump has been installed and improvements made at the water plant costing nearly \$20,000. All this has been done without increasing the outstanding indebtedness; in fact, the retirement of a \$1,000 bond has also been accomplished.

#### Use of Water Meters Increases.

Spokane, Wash.—Almost as many water meters were installed in 1912 under the new policy to encourage meter installation inaugurated by Commissioner Fassett as were installed in all the prior years of the water department put together, according to figures for 1912 issued by the department. During the year 3,477 meters were put in. This includes the actual figures for eleven months of the year and the first part of December, and an estimate for the latter part of December. In 1911 2,338 meters were installed, this also being a record year. On January 1, 1913, there was approximately 8,000 in service. The heavy installation of meters and the consequent elimination of waste among water consumers is diminishing the water revenue, but on the other hand cutting down operating expenses.

#### Good Water Pressure at North Tonawanda.

North Tonawanda, N. Y.—The reports of the Tonawanda and the North Tonawanda water departments show that during last year over 3,500,000,000 gallons of water were pumped by the two water stations. There were 87 fires in the Tonawandas during 1912, but the total loss was exceptionally light. The water pressure was very good during the year.

#### Water and Sewerage Plant Finished.

Aberdeen, S. D.—W. G. Potter, the engineer in charge of the work of constructing the new city water reservoir and the sewage disposal tank, has made his report on the reservoir to the city commissioner. The reservoir is divided into two compartments, each of which will hold 300,000 gallons of water, and is so arranged that the water will be kept absolutely pure and free from sedimentation of any sort. When completed, the reservoir will furnish water sufficient, in case of fire anywhere in the business district, to supply eight streams at once at an average pressure of 80 pounds. It is believed the reservoir, with the equipment going with it, will solve both the fire fighting and the water supply problem for Aberdeen for years to come. The engineer states the work is progressing so rapidly that the reservoir will be ready for use early this spring.

#### Finish Water Tunnel.

Santa Barbara, Calif.—The banquet given at the Potter hotel, attended by more than 200 people, celebrating the completion of Santa Barbara's 4-mile water tunnel, one of the largest civic projects ever executed by a city of similar size, was marked by initiative steps toward the erection of storage reservoirs at the north portal of the tunnel to cost in the neighborhood of \$400,000. The added improvement was advocated in a speech by J. B. Lippincott, of Los Angeles, consulting engineer, and by Attorney Henley C. Booth, of San Francisco. If the suggestions are carried out the total tunnel project will have cost a round million dollars, the bore itself having represented an outlay of \$600,000.

#### Report of Water Department.

Washington, D. C.—During the past year thirty miles of new water mains were laid, making the total length now in use about 565 miles. The most important work was the extension of water service to Congress Heights, Benning and Kenilworth, all of which places up to the time this work was completed having been dependent for water on wells and cisterns, and being practically without fire protection. The total cost of the extension was \$140,000, this being \$10,000 less than the estimate. Seven thousand meters were placed, and the installation of 10,000 is planned for this year. The average daily consumption of water during the year was 62,000,000 gallons. Plans were completed for an extension of the water service to the higher land beyond the Eastern branch, land bought and contracts made for piping, engines, pumps, etc. It is hoped to complete this work by May, 1913. The total water revenues during the year were about \$700,000.

#### Water's Purity Shown by Tests.

Syracuse, N. Y.—Exhaustive examinations of Syracuse water, made twice a week during the past year by City Bacteriologist F. M. Meader, have conclusively proved that it is practically pure. Dr. Meader has filed his annual report with Health Officer D. M. Totman, in which he reviews the work of his department, not only on the examination of water furnished the city, but also its various other activities during the past year. Examination of 107 samples of city water taken from taps in the City Hall and from other sources in various parts of the city have shown that an unusually small percentage of bacteria are present. In only twenty-three samples have counts shown more than 100 bacteria per cubic centimeter, and these counts were during the spring months. Wells and springs in the vicinity of the city were also examined and of the 215 tests made water from fifty of the wells and springs was found to be of unusual purity. These wells and springs were marked with a metal tag.



**Water Supply of Bisbee Runs Low.**

Bisbee, Ariz.—Although every effort is being made by the water company to supply sufficient water, Bisbee is now suffering a small water famine. So many of the pipes have burst that the water company is unable to get any head of water in the reservoir. Besides this, householders are leaving their taps open so that, if there is any flow of water they can secure some to store. This leaves a large percentage of the pipes open and, as soon as any water is pumped into the reservoir it is immediately used. The Copper Queen mine has had one car of water sent up. The Southwestern has announced that it is prepared to haul water, but the water company officials state that, with the large force of men that are now at work repairing the pipes, they soon expect to have an adequate water supply and that the hauling of water will not be necessary.

**New Waterworks at Chamberlain.**

Chamberlain, S. D.—For the past several months the Blackhawk Construction Co., of Waterloo, Iowa, has been installing a new pumping station on the banks of the Missouri River at this place in connection with the city water system, and the work has been completed and the water turned into the city mains. A filtering plant is a part of the system so that the water turned into the mains is clear and pure. For the past twenty years the city has been supplied by artesian wells, but a desire upon the part of the citizens for soft water for all purposes resulted in the installation of this new plant, which was installed at an expense of about \$20,000. The motive power and pumps are duplicated so as to prevent as far as possible serious consequences from break-downs or necessary repairs at the power house.

**One Leak in Pipe During Year.**

Lockport, N. Y.—The annual report of Charles Peterson, superintendent of waterworks, prepared for the water board, shows a 33 per cent. improvement in the condition of the city water from the Niagara River since the joint committees of the several cities of the Niagara frontier through Congressman Simmons had Secretary of War Stimson stop the dumping of spoil in Motor Island channel by the Buffalo Dredging Co. The report is based upon state analysis of the water by the department of health at Albany. A report on October 22d showed that the water contained 450 bacteria per cubic centimeter, while on December 5th this was reduced to 300, thereby putting the water in normal condition and according to the state report making it "quite clear." His annual report also shows but one leak in the pipe line from the river to Lockport in the fiscal year ending Dec. 1 last. Two years ago there were about 700 leaks.

**Cave Under Reservoir.**

Johnson City, Tenn.—The new reservoir, south of the city, which had just been completed at a cost of \$19,000 when it sprang a leak one night last week sending down upon a part of the town an immense volume of water, has been undergoing an inspection as to the cause of the break. The inspection has been made by J. C. Cook, chief engineer of the M. B. McCrary Co., of Atlanta. The expert made a report before the city council expressing the opinion that a large boulder and a cave beneath it were the causes of the disaster. Mr. Cook stated that five feet back south of the northern corner the bottom of the reservoir rested on a solid rock, and that just under the corner was a large rock, or boulder upon which the wall of the reservoir rested. Between the bottom and inside wall a small crevice has been left by the contractors. The crevice seems to extend all the way around the reservoir. This caused a breakage, and at the north corner where the clay beneath this boulder became water soaked, the boulder pulled away or settled down from under the corner of the reservoir and this enlarged the crevice. Mr. Cook gave as his opinion that ages ago, due to some geological disturbance, the ledge of rocks underneath the reservoir had been broken to pieces and that a cave resulted. He further stated that the reservoir could be rebuilt, and that he estimated the cost of same

at \$2,500, and that it should be done at the expense of the city. The reservoir was constructed by Oliver & Hill, of Maryville, Tenn., and would have held 4,000,000 gallons of water. The water was furnished from Big Blue Springs, Unicoi county, a distance of 13 miles. Before rebuilding the reservoir the city will make further investigation. In the meantime the people of the city will be supplied with pure free stone water from springs, as the reservoir was only built for fire protection and as a source of water supply, for the Soldiers' Home.

**Water Plant Submerged.**

Frankfort, Ky.—"Water, water, everywhere, but not a drop to drink," was the condition in Frankfort because the water company's pumping station was put out of commission temporarily by the rise of the river. The valves of the pumps, which were under water many feet, became so clogged with sand, drift and trash that the pumps were unable to force any water up to the reservoirs. The water supply in the reservoirs was exhausted, there being none left for the fire hydrants. Mayor Polsgrove ordered a fire engine from Lexington, to be used if a fire broke out while the reservoirs were empty.

**Extending Water Mains.**

Terrell, Tex.—Important extensions are being made in the water system of Terrell. A new 4-inch main is to be laid from Grove street to near the oil mill. The main on Griffith avenue is to be made 400 feet longer and about 4,000 feet is to be laid in North Terrell, reaching to the Stallings addition, which heretofore has been without fire protection.

**Having Trouble With Joints of Mains.**

Minot, N. D.—Minot's water system is causing more or less trouble and apparently there is no relief in sight. The first trouble occurred several weeks ago when the packing blew out of the main on Belyeau avenue and left the city without water for two days. The next trouble occurred early New Year's morning when no less than three leaks were discovered in various parts of the city. Within about an hour the big tank on the south hill had been drained and the city for several hours was without water and fire protection again. Several leaks were discovered and stopped within the past week and reports of trouble are coming into the pumping station daily. A leak somewhere along Main street flooded the basements of the Brauer, Le Suer, Pohnson and Samuelson blocks. It is said by those who have investigated the trouble, that the pipes in certain places were not joined properly and it is believed that in various parts of the city, one pipe was not given the proper lap over the other, thus causing the trouble.

**Good Report of City Water Department.**

Topeka, Kan.—The annual report of the city water department, recently compiled by Commissioner H. P. Miller, shows a general fund on hand of \$43,385.74, in comparison with \$16,191.37 for 1911. Mr. Miller has for 1913 two definite plans on foot. The first is to build a house, pump and pit at a probable cost of \$40,000. The second is to reduce the cost of city water 15 cents per thousand gallons. A brief summary of the expenses for 1912 reads as follows: Receipts, including hydrant rentals, \$138,331.79; expenses, including operating expenses, repairs, extensions, improvements, interest on bonds, etc., \$102,086.40; balance, \$36,245.39. Of this balance exactly \$9,300 was transferred to the sinking fund during the year which has just closed. The several January balances include the following items: General fund, \$43,385.74; interest fund, \$6,914.64; sinking fund, \$13,284.54. City bonds to the amount of \$42,101, Mr. Miller adds, are also in the sinking fund of the water department. The improvements now under way, including building, pump pit and pump will cost the city of Topeka approximately \$40,000. "This has been a prosperous year," said Commissioner Miller, "by far the greatest accomplishment we have made has been the metering of the entire water service. The metering of the service has been of inestimable benefit. I should judge that it amounts to a saving of 500,000 gallons of water each day."



### Says Excessive Amount of Alum Is Used.

Hackensack, N. J.—The discovery that tons of alum are being dumped into the Hackensack Water Company's reservoir has aroused the Hackensack Board of Health and prompted Col. Alfred T. Holley and several of his colleagues to start inquiries. It is reported that a carload of 25 tons of alum has recently been delivered at the company's plant. The water so treated is delivered in Hoboken and North Hudson as well as in Bergen County municipalities. Hoboken has not yet been seriously inconvenienced by the presence of alum in the water, but the fastidious folk of Bergen County are disturbed over the alum taste and want to know why the water has to be treated with chemicals. "The impression has gone broadcast," says President Holley, "that the water supply is bad, and it is the duty of the health board to get at the facts. If the water is good, all right. If it is bad, let us get at the root of the trouble." "There is a tremendous amount of alum being used," says Commissioner E. B. Walden. Health Officer George Finke has been at the waterworks to make investigation. The health board has ordered its sanitary committee to probe the matter.

### Inspect Filtration Plant.

Dallas, Tex.—Progress on the work of constructing the filtration plant at Turtle Creek pumping station is pleasing to the city officials who visited and inspected the place lately. In the party were Mayor W. M. Holland, Water Commissioner R. R. Nems, Police and Fire Commissioner Louis Blaylock and City Engineer J. M. Preston, with Chief Water Engineer J. M. Bassett. Practically all of the water has been taken from the east reservoir at Turtle Creek, the clear water basin for the filtration plant. The city's forces are at work flushing as much as possible of the mud deposit accumulated through fifteen years since the last cleaning. A little more work of that sort and teams with scrapers will be brought into use, with wagons to take the two to three feet of dirt which has been precipitated from the water in the settling basins at a rate of nearly three inches a year. It is expected that the process will require about thirty days. Meantime the work of repairing the middle wall, partly repaired fifteen years ago, is to be undertaken, a job that Mr. Fuertes has planned, and which is expected to require at least thirty days. Pouring concrete has been started on the north wall of the reservoir basin, where a conduit 600 feet long will be laid near the top of the embankment to distribute the water that will be brought into it from the filtration plant and to empty in such manner as to keep constant circulation of all parts of the pool. The 800 feet of 42-inch iron pipe from the filtration plant to the conduit have been laid and most of the 500 feet of 42-inch pipe from the receiving basin to the filtration plant is ready. The 30-foot excavation, about 100 x 150 feet, that will be the site for the filtration plant and filter beds, is ready for the concrete work, and it is expected that with good weather this will begin this week.

## STREET LIGHTING AND POWER

### Mazda Lamps Are Popular.

Rochester, N. Y.—From figures presented by City Engineer Fisher in his report to Mayor Edgerton on street lighting work done last year, it is made plain that the Mazda lamps installed in residence sections have proven popular, and that a great increase in their installation was made during the year 1912. A total of 1,769 Mazda lamps are now in operation, 600 of which were either added during the year or are in process of installation. In contrast with that is the small increase in the number of old style arc lamps, but 20 of which were added in 1912. There is now a total of 4,100 arc lamps in operation. The demand for the Mazda lamps and the concrete poles is so heavy that the installation cannot keep up. It is expected that an ordinance will be introduced in the Common Council at its next meeting, providing for the installation of the inverted magnetite lamps in Main street, similar to those which are now in operation in East avenue. The cost of maintenance of the lights in East avenue is assessed at 37

per cent. on the property owners. The 100 lights in East avenue, which were erected last year, are held to be the latest thing in street lighting, and East avenue is now considered to be one of the best lighted streets in the country. It is perhaps the only residence street in the country which is lighted throughout its entire length by means of magnetite arc lamps of the inverted type.

### Test New Municipal Power Plant.

Danville, Va.—Four of the boilers of the new municipal electric lighting plant were fired up in a preliminary test last week. Only 50 pounds of steam was raised on the initial test, but during the coming days they will be given a rigid try-out, and the remaining boilers will be dealt with in the same way as soon as they are ready to be put in operation. The work is going on rapidly now on the new plant, and it will probably be in running order by March or April. The roof has yet to be placed, but now that the steel frame windows have come, it will not be long before the covering of the building will be commenced. This done, the work of adjusting the turbines will be begun.

### Lighting Cost Drops 70 Per Cent. Under City Control.

Winnipeg, Man.—The year 1912 is the first year in which the city's municipally owned power plant was in operation, and the result is entirely satisfactory. The cost of domestic lighting has been reduced 70 per cent. and that of power proportionately, and the plant is already paying its way, the revenue monthly covering the cost of interest, operating expenses, depreciation, advertising and other expenses, and that with less than 12,000 horsepower in operation. The capacity of the plant is 60,000 horsepower.

### Municipal Plant Set Back.

Burlington, N. J.—Municipal ownership of an electric light and power plant met with a temporary setback when the Council granted a new five-year contract to the Public Service Electric Company. An election on the proposition of municipal ownership had been postponed pending the decision of the case before the Supreme Court, which last week declared the State law invalid because of a technical error in its enactment. Councilmen who wished to grant a short-term contract were out-voted. As a result of the campaign for municipal ownership, directed by Councilman Charles M. Scholey, the company cut the cost of lights under the new contract, effecting an annual saving thereby of about \$1,000 to the city.

### Electric Light and Water Plant Out of Commission.

Calhoun, Ky.—The flood situation although somewhat improved is still alarming. The river at Calhoun is on a stand, the crest of the flood being reached. Both the electric light and water plant are out of commission, and a water famine is threatened, it is said. Health authorities declare epidemic of typhoid fever will likely follow the flood.

### Municipal Natural Gas Plant.

Edmonton, Canada.—James Brodie, city gas engineer, has just submitted a report to the board of commissioners, recommending that the municipality of Edmonton build a pipe line to Pelican Falls, 175 miles, and establish a distributing system of 28 miles in the city limits. The cost of the project is placed at between \$2,000,000 and \$3,000,000, of which \$300,000 is for the local mains. He estimates that natural gas can be supplied for domestic use at 30 cents per thousand cubic feet and 15 cents to manufacturing concerns. The municipality already controls several square miles of land in the immediate vicinity of the gas well at Pelican Falls. It also has a right-of-way from the last named point to Athabasca, 79 miles. There is an abundant supply of natural gas in the district. This has been proved by test wells. The control of gas-bearing lands in the north country has been secured direct from the Dominion government, thus placing the city in position to own and operate gas wells, a pipe line and a distribution system for natural gas. While the commissioners and aldermen are of the opinion that the city should take advantage of adding natu-

ral gas to its string of municipal-owned public utilities, no provision has been made for financing the enterprise. It is announced that the state of the money market in Europe is such as to forbid undertaking the project this year. It is also given out that the council would entertain a proposition of a private company financing the plant, including pipe line and distributing system and turning it over to the city when completed on a long-term agreement. On the other hand, several members of the council are in favor of the city owning the plant from the start. This, of course, is on the understanding that the city controls the flowing wells in the Pelican Falls district.

#### Macon Police Seek Electric Light Clippers.

Macon, Ga.—The police here are exercising great care at night for the purpose of capturing guilty parties who cut out the arc lights in certain portions of the city every night. While the electricians of Macon are on a strike, it is not known whether the strikers are guilty of the conduct or not. The first of last week, the main wires for the arc lights and incandescent lights of the houses in the restricted district went out. When workmen arrived to make connections, it was found that the different circuits had been tampered with.

#### New Lights at Gainesville.

Gainesville, Tex.—The Commerce street "White Way," which has just been completed, has been lighted for the first time, and adds much to the general attractiveness of the city. This gives Gainesville two "White Ways" and the reputation of being one of the best lighted cities of its size in the state.

#### Light and Water Plant Out of Debt.

Cuyahoga Falls, O.—The year 1913 has been started by the Falls light and water plant with a clean slate. No indebtedness is reported and many extensions have been made by the company. A mile and a half extension of water mains has been made. In all cases this extension has been constructed of 4-inch pipe. About two and a half miles of light extension has also been made. "Takers" have been installed about the Gorge, making it possible for residents in this end of town to have their homes lighted by electricity. What is known as the "Big Spring" has been leased by the company for a period of five years. This guarantees an abundant water supply for the plant. It is tapped with a 4-inch main. About 75,000 gallons of water daily are being saved, it is estimated, by the installation of meters. The meters will pay for themselves in about two years' time. Six men are at present employed at the plant; three firemen and three engineers. The superintendent, L. F. Cook, has energetically pushed things at the plant and about the city, helping to make the proposition successful.

## FIRE AND POLICE

#### Brownwood Seeks Lower Key Rate.

Brownwood, Tex.—R. B. Godley, Jr., of State Actuary Roulet's office at Dallas, has been in Brownwood making a survey which will give Brownwood a reduced key rate for fire insurance. The city council and local insurance men have adopted many measures recently which will help to lower the rate. Fire prevention is now being taught in the public schools, and a standing reward is offered by the council for any party found guilty of arson. Larger water mains are being laid, all old fire trap buildings are being condemned, and other measures taken which will please the insurance companies.

#### Fire Department Changes.

Chicago, Ill.—Improvements which will materially strengthen the Chicago fire department have been announced by Chief Seyferlich. Among them are: A new branch of the department, consisting of three high-powered motor-driven vehicles to be known as "squad wagons" for reinforcing the regular companies. Addition of 60 new

men to the department. Promotion of one captain to be battalion chief, 5 lieutenants to be captains, with the addition of 9 new lieutenants. Mayor Harrison and Chief Seyferlich and his assistants inspected the three new "squad wagons" on the Randolph street side of the city hall. Each wagon will carry a captain and a lieutenant and twelve men. One of the "squad wagons" will cover the downtown and north side, a second the west side, and the third the south side.

#### Large Number of Fire Escapes Placed Last Year.

St. Paul, Minn.—Thirty-one iron stair fire escapes were placed on old buildings in the city during 1912, as compared with twelve during 1911. The city ordinance requires that all buildings three stories or higher shall be equipped with fire escapes, an exception being made, however, in the case of apartment houses having front and rear inside stairs, which may be four stories in height before coming within the provisions of the ordinance. A penalty of \$100 is provided for violation of the ordinance.

#### First City in United States to Install System.

Los Angeles, Cal.—Los Angeles is to be the first city in the United States to have the Western May-Oatway fire alarm system, according to a communication sent by the corporation owning the patents to the fire commission. The alarm boxes are placed in private buildings and connected with a general alarm at fire headquarters. The corporation has asked the commission for a permit to install its receiving apparatus at headquarters. The petition was referred to the chief. In its communication the corporation says the apparatus it manufactures has been in successful operation in New Zealand, Scotland, England, Ireland, Australia, South Africa, British Columbia and Canada, but has never before been used in the United States. Where it has been used they claim the fire loss has been less than one per cent.

#### Last Year's Fire Losses \$225,320,900.

Hartford, Conn.—Figures compiled for the year 1912 show the country's fire loss to have been \$225,320,900. This is \$9,000,000 less than the year 1911, and is the result of improved methods of safeguarding property by the growing use of such facilities as fire extinguishers, as well as the better organization of fire companies and the fire service generally throughout the country. Another factor in the safeguarding of property is the growing use of safe deposit vaults, the campaign for a safe and sane Fourth of July and the better inspection of insured buildings. Following are the figures of fire losses for the past three years:

1910 .....	\$234,470,650
1911 .....	234,337,250
1912 .....	225,320,900

Despite the decrease, the figures yet show the necessity of every preventive facility.

#### Mason City's Fire Shows Defect in Law.

Mason City, Ia.—The quarter million dollar fire loss through which this city has just passed has brought out the knowledge that the state is without a law which will permit a city of the second class to establish building ordinances. City Attorney Witwer and Judge John Cliggett both recently said that the second class cities of Iowa were powerless to act. They can pass minor regulations, but not the relief necessary. A bill is certain to be presented at this session of the legislature. Attorney Witwer already has one in preparation which will provide for the issuance of permits and for building inspectors. All buildings to be constructed which are to cost \$2,600 or more are to be submitted for approval and for the proper punishment of violators. The bill will also provide for the payment of expenses in the enforcement of these regulations, shall become a lien upon the property and collected as taxes. This act would be applicable to cities acting under special charter and cities under the commission form of government.



## MOTOR VEHICLES

### Oroville's Chemical Engine Expected.

Oroville, Cal.—Mayor G. W. Braden has received word that the combination chemical engine and hose motor car ordered by the board of trustees some time ago for the Oroville fire department had been shipped on December 26 from the La France Company, of Elmira, New York, and is now en route. The machine will be ready for immediate service on its arrival. The machine is very handsome in appearance and is declared to be the best piece of mechanism of its kind made.

### Motor Trucks Now to Clean Streets.

New York, N. Y.—William H. Edwards, familiarly known as "Big Bill," commissioner of the street cleaning department, has just announced his plans for improving the service next season by means of new methods and apparatus. Motor trucks to replace single carts are to be among the innovations, experiments having shown that the work can be more cheaply and expeditiously done with trucks than horse carts. He also declared his intention to institute night sweeping by gangs in the congested districts in order to remove all the street litter and filth and protect the health of the tenement dwellers.

### County Auto Economical.

Paterson, N. J.—County Road Supervisor Bustard has submitted his annual report to the freeholders. An interesting item in it was the one showing that the county paid \$534.33 for the maintenance of its automobile during the past year. This is a very moderate figure, considering the fact that the machine traveled thousands of miles and that the county road supervisor was able to make the necessary trips much more rapidly than with a horse and buggy as in former years. The machine was purchased for \$1,950 and will be of good service to the county for many years. During the year, the report shows, the county oiled 64 miles of road, at a cost of \$14,725.72. Many miles of road were repaired by county employees under the supervisor's direction. The cost of these repairs was \$35,313.39. The amount spent for road repairs by contract was \$61,873.62. It cost the county \$4,071.59 for roads treated with Tervia "B." The total amount expended on roads was \$121,770.65.

### The New Municipal Ambulances.

Indianapolis, Ind.—The city hospital began the new year with new ambulance equipment, consisting of two special ambulance bodies mounted on Pathfinder chasses, built by the Motor Car Manufacturing Company, of Indianapolis. The interior of these two cars is the very latest in ambulance construction. Every desired appliance has been fitted to the vehicles. The speed and remarkably easy riding quality of the cars are certain to make the trip from the scene of accident or sick bed to the hospital one of much shorter duration and greater comfort than was afforded by the old type of ambulances formerly in use.

### Committee Accepts Auto Truck.

Winston-Salem, N. C.—By the action of a special committee the new triple combination automobile pumping car recently brought to the Twin-City and tested every day for a week or more, becomes the property of the city of Winston. The committee appointed by the board of aldermen to accept or reject the apparatus has formally accepted it. The new triple combination car is of the very latest and most improved model. The engine it carries is of the same type used in the modern touring car, which costs from \$8,000 to \$12,000.

### New Engine Given Test.

Hagerstown, Md.—The new Antietam fire engine was given a preliminary test at Washington Square under the direction of C. M. Perkins, demonstrator. The engine was run for some time and a fine stream of water was thrown, and delivered from 600 to 700 gallons per minute. It took the grades well and ran from 15 to 25 miles per hour. The engine carries 1,000 feet of hose and the chemical apparatus has 120 feet of hose. The engine attracted much attention as it was driven through the streets, and much favorable comment was heard, at both the appearance of the apparatus and the work done by the engine. It was tested with several sized nozzles and did good work. A large crowd of people gathered near the engine to witness the test. A final test will be given in a week or ten days.

### Motor Truck Accepted.

South Bend, Ind.—The board of public safety has formally accepted the new motor hook and ladder apparatus just added to the equipment of the South Bend fire department. The truck was placed in commission immediately. Running time to fires on the outskirts of the city is expected to be greatly reduced by the use of the new truck. Constructed by the American-La France Fire Engine Company, of Elmira, N. Y., the truck is the largest yet put into commission in South Bend. The four-cylinder motor develops 70 horse-power by actual brake test and the wheel base of the automobile is 20 feet. This is the third automobile placed in service on the South Bend fire department. A fourth is now under construction. Work has already been started on a new motor hose truck for the central station, and it is thought that by the first of April South Bend fire department will have four motors in commission.

### Auto Chemical in Bristol Makes Record.

Bristol, Conn.—Fire Chief Harlan B. Norton has prepared a statement showing the fire fighting efficiency of auto chemical No. 2. This is a Pope-Hartford machine and is located in the house of Uncas Hose Co. No. 2, on North Main street. It is equipped with 800 feet of standard water hose, one 40-gallon chemical tank, 200 feet of chemical hose and hand extinguishers. Two men are on duty at all times, and in addition it may be accompanied by any of the members of Uncas Hose Company, who are call



Courtesy Indianapolis News.

PATHFINDER AMBULANCE EQUIPMENT BUILT BY THE MOTOR CAR MANUFACTURING COMPANY, INDIANAPOLIS.



men and number 25. This machine responds to all alarms, and during the year 1912 it went out 42 times. Four of these alarms were general and 38 still ones. Water hose was laid 8 times, the chemical tank was resorted to 10 times, and hand extinguishers were sufficient at other calls, in all 38 hand extinguishers were employed. The total amount of chemical used from the tank and hand extinguishers was 514 gallons. Before this machine was placed in service all three companies responded to every alarm turned in. From the above statement it will be seen that the machine is able to cope with the majority of fires.

#### Automobile Fire Truck Expense for Year \$31.

Racine, Wis.—The total cost of maintaining the motorized combination chemical and hose truck at No. 2 fire station during the year 1912 was \$31.78. During the year the truck answered 112 alarms of fire and traveled a distance of 289 miles. The money paid out for maintaining the truck was for gasoline and lubricating oils, as not a penny was paid for repairs. This is a new record for the expense in maintaining a motorized piece of fire apparatus. The cost of keeping a team of horses on the fire department is from \$35 to \$40 a month, all depending upon the cost of feed. Each month the bills for hay, oats and for shoeing of a team of horses is over \$35. Horses suitable for the fire department cost about \$600 a team, and the life of a horse on the fire department is about six years.

#### Jersey City Police Equipment Model for Washington.

Washington, D. C.—The police equipment of Jersey City and Newark has been used as a model in determining the amount of the same kind of equipment that should be possessed by Washington. The three cities are about the same size in population—at least near enough to estimate the matter with a fairly accurate result. Representative Kinkead of Jersey City is a member of the sub-committee of the House Committee on Appropriations, which has charge of allotting the items in Washington's municipal budget. The municipal authorities here decided they didn't have enough police patrol wagons and asked Congress to appropriate for two more auto patrol wagons. Representative Kinkead gathered data from the police officials of Newark and Jersey City and, using these as a basis, the sub-committee reached the conclusion that Washington ought to have the two additional patrol wagons asked for, and the committee voted favorably on the recommendation.

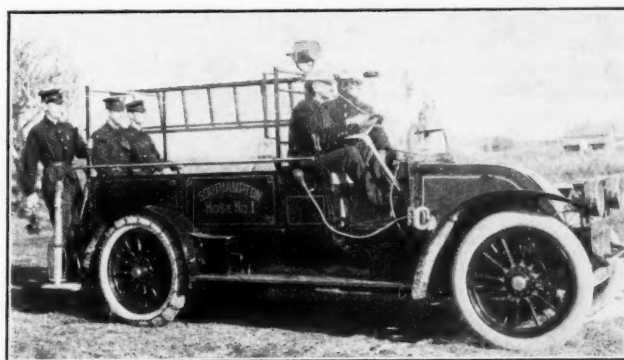
#### Will Spend \$17,500 on Fire Equipment.

St. Paul, Minn.—St. Paul will expend \$17,500 in 1913 for new equipment for its fire department. This statement was made by an authority whose word goes, and, moreover, he predicts that the expenditure will be made in the purchase of motor engines, or else in accessories that will make the horse-moved vehicles of the present serve in the same capacity. The outlook is that the day of the horse, so far as the St. Paul fire department is concerned, is doomed. The department has just put a new vehicle into commission, and henceforth, Third Assistant Chief Miles McNally, who is stationed at Bedford and Beaumont streets, will discard the use of the horse. Chief McNally will drive a Cadillac, whereas all the other vehicles now in use in St. Paul fire circles are Pierce Arrow models. Chief McNally experimented with the Cadillac vehicle before it was decided to let him use it permanently. The first automobile used in the St. Paul fire department was bought five years ago next May—to be specific, in May, 1908—and in the time the Pierce Arrow has been used there has never been a complaint. Nevertheless, the fire department, on its own account wanted to experiment, and to this end the Cadillac has been brought into play. Chief Engineer Strapp would not say that the automobile has prevented loss of life in St. Paul, but he did say that in his opinion a great property loss had been prevented by use of the automobile, as otherwise the department could not have reached the scenes of fire in time. "There's no use mincing matters," the chief said, "the automobile is a great adjunct. Why only the other

day the squad wagon stopped a fire that might have otherwise assumed large proportions. I'm a friend of the automobile as an adjunct in fire fighting, and don't mind saying so. It has taken me to many a fire that I could not have reached otherwise in time to give necessary instructions."

#### Automobile Hose Car Makes Fine Showing.

Southampton, N. Y.—The members of Southampton Hose Company No. 1 built the body of their new automobile hose car, an illustration of which is shown. The car is a chassis of 50 horsepower G. V. C. The members made a run from Southampton to Bridge Hampton, a distance of six miles in eleven minutes with eight members of the



HOSE CAR BUILT ON G. V. C. CHASSIS.

company on the car. On Christmas morning to try the reliability of the car in deep snow the foreman and chief of the department and a member gave it a trial of eight miles in from 12 to 18 inches of snow and made an average speed of 15 miles.

#### Would Restrict Speed Limit on Auto Trucks.

Boston, Mass.—Boston automobile men regard with approval the recommendations of the Massachusetts highway commission, made public in its annual report to restrict the weight and speed of auto-trucks. The report says: "The commission believes that the law should limit the weight and speed of such vehicles (heavy trucks) and the speed at which they may be moved over highways. The law should limit the kind, character and weight of the vehicle and the load. Already one bridge on the main line between Boston and Fitchburg has been practically destroyed by a six-ton truck which went over it. Officials in many towns are complaining that roads which they repair are immediately destroyed by heavy motor trucks."

#### Chief Recommends Motor Apparatus.

Fort Smith, Ark.—D. B. Trowbridge, chief of the fire department, has filed his report of the fire loss for 1912. The total loss during the year was \$188,929.82, or less than \$900 per alarm, but, as the chief points out, this average is far too high and could be reduced by the exercise of a little care. In his report he says: "I would recommend that this department be put in condition to cope with the present fire hazard. This can be done with a few thousand dollars in equipment; with motor apparatus, which will be a great saving in maintenance. I am informed that the new water system will increase the standing pressure, which is necessary."

#### Work of the Fire Protective.

Lowell, Mass.—The protective company of the Lowell fire department, located in Warren street, which responds to every alarm of fire, was kept busy during the year 1912 and the annual report of the work of the company shows that the members were kept very busy and did very effective work in protecting property. While this company has for years been noted for its excellent work the substitution of the automobile for the horse-drawn vehicles has resulted in an even higher grade of efficiency for the company is able to reach the scene of a fire much quicker. During the year the company responded to 404 alarms of which 226 were bell alarms, 159 telephones, 17 stills and

two automatic. They laid 495 covers and used 173 extinguishers and 84 tanks; also 775 feet of ladder were laid. They were on fire duty 457½ hours and spent 647 hours on inspection duty. The automobile traveled 945½ miles during the year. During the year the members responded to three second alarms and one general alarm. The greatest amount of mileage in any one month was during December just ended when the machine traveled 152 miles while in August the mileage was the lowest, 25 miles. The number of alarms responded to by months is as follows: January, 39; February, 23; March, 28; April, 33; May, 30; June, 37; July, 46; August, 13; September, 27; October, 31; November, 47; December, 50.

#### Automobile Fire Engine Saves City \$37.70 Up-Keep.

Massillon, O.—The report of Safety Director Shepley for the month of December shows a saving of \$37.70 in the cost of maintaining the automobile fire engine as compared with horse-drawn apparatus. During the month of December the motor truck consumed 30 gallons of gasoline and 5 gallons of oil, amounting to \$6.30, while the cost of maintaining the horse-drawn apparatus, at \$15 a month per horse, would have been \$45. During November the cost of the up-keep of the motor apparatus was \$4.32, the cost of December being higher because much of the running was done through the snow. The total expense for maintaining the motor apparatus for three months was \$29.82. For three horses for the same length of time it would have been \$135, making a saving of \$105.18.

#### Four Auto Trucks Saved Twenty-five Cents Per Ton.

Portland, Ore.—Twenty-five cents a ton has been saved by the water department in the cartage of pipe and other material during the last year over the cost of former years through the use of automobile trucks. As the tonnage of material handled is enormous, the saving will run into thousands of dollars. In past years the department hired teams to cart the pipe and other material used in the construction of water mains from the pipe yards to where the material was to be used. This cost on an average of \$1.25 a ton, according to the annual report of Engineer Clarke. About a year ago motor trucks were purchased and put into service, and a close account of all the expenditures was kept. At the end of the year it was found that the cost of handling pipe had been reduced to \$1 a ton, or a saving of 25 cents over the old method of handling materials. The \$1 cost includes labor and repairs, plus 25 per cent. for interest on the investment and depreciation. The department has arrived at the conclusion that it can lay pipe with its own labor much more cheaply than if the construction of the mains is done under contract. In 1910 all mains were laid under contract, while during a portion of 1911 and last year the mains were all constructed by the department. It has been shown by the accounts that a saving of 14 cents a lineal foot in the cost of laying mains has been made over the former system, and as there were 422,594 lineal feet of mains laid, it is estimated that the total saving over the old method is approximately \$59,163.

## GOVERNMENT AND FINANCE

#### Commission Government at Nocona.

Nocona, Tex.—In the recent election the commission form of government was carried by seventy-six for and thirty-eight against. J. M. Bonds, the former Mayor, was elected Mayor in the new form of government.

#### City Has Surplus of \$120,000 Left at End of Year.

Spokane, Wash.—Money saved by the city commissioners in the operation of their departments during 1912, over and above the appropriations for that year, amount to \$127,036.79, according to the 1912 report of the city auditor. This is over \$50,000 more than the preliminary estimate made as to the amount of surplus various departments would have for the year. It was believed then that the surplus would not exceed \$75,000. The department of public works, including divisions under City Engineer Macartney and Commissioner Coates, is credited with the biggest saving of the year out of the 1912 appropriations.

In this department it amounts to \$76,546. The department of public safety, under Commissioner Hayden, comes next with a saving of \$27,664.39. Only two funds under the control of the commissioners and sustained out of general taxation show deficits in the report and these are the city laboratory operating fund, deficit, \$30.64, and the dental clinic, deficit \$39.50. All other funds show a surplus. The water rent accounting and collection fund and the water operating and repair fund show deficits at the end of the year, but these departments, under Commissioner Fassett, are on a revenue basis and in no way affect general taxation in the city. The park board at the end of the year has a balance of \$263,976, being the remainder of the \$375,000 park bond issue and the park board's appropriation of \$90,000 for 1912 operating expenses.

#### Commission Charter Wins.

Taylor, Tex.—The election held in Taylor upon the proposition of applying to the State Legislature for a special charter for a commission form of government for the city of Taylor resulted in the proposition carrying by a majority of over two to one.

#### Will Buy Back Some of Its Own Bonds.

Rochester, N. Y.—On the recommendation of City Treasurer Lyman N. Otis, the City of Rochester will probably buy back \$300,000 of its own bonds as an investment with funds from the sinking funds, and Treasurer Otis believes that by so doing the city will be much the gainer. The funds are now drawing but 3½ per cent., but by investing the money in the bonds, an additional income of about \$4,500 yearly will be obtained. It can be seen that at the end of the life of the bonds the city will thus be the gainer by nearly \$100,000.

#### Many Towns Seek Commission Form.

Lincoln, Neb.—Nebraska towns want the commission form of city government and twenty towns to which the Nebraska law permitting it does not apply, joined in a movement to amend the statute at the opening session of the Nebraska league of municipalities. The towns whose officers signed the petition are Alliance, Aurora, Auburn, Crete, David City, Benson, Platts-mouth, University Place, Superior, Wahoo, Wayne, Falls City, Lexington, North Platte, O'Neill, Schuyler, Seward, Wymore.

## STREET CLEANING AND REFUSE DISPOSAL

#### Favors Municipal Collection.

Niagara Falls, N. Y.—Mayor Laughlin is not fully convinced that it is best for the city to have the ashes and garbage collected by contract. He is looking up the practices in other cities. He believes that if the city were to buy three or four auto trucks all the refuse might be collected for less than a contractor would demand for the work.

#### Garbage Plant Ready in Spring.

Racine, Wis.—The work of excavating for the new garbage incinerator, at the foot of Stannard street, has been nearly completed by James Corse and Co., to whom the contract was awarded. It is expected that by April 1 the incinerator will be in operation and the work of collecting garbage started by the city. Work on the garbage incinerator is to be pushed all winter so that it may be ready by early spring. Whether it can be completed in time, all depends on the weather. A feature of the incinerator will be a 150 foot chimney, the smoke from which will not discommode nearby residents. The question as to whether wagons or automobile trucks will be used in collecting garbage is still undecided by the common council, an investigating committee having been appointed to visit Milwaukee and to secure data from the engineering department of that city, which has tried out both. The board of health, before the coming of spring, will draft a set of regulations, which will govern the collecting of garbage, the kind of garbage cans to be used, etc.



## RAPID TRANSIT

### Street Car Men Ask For Many Safeguards.

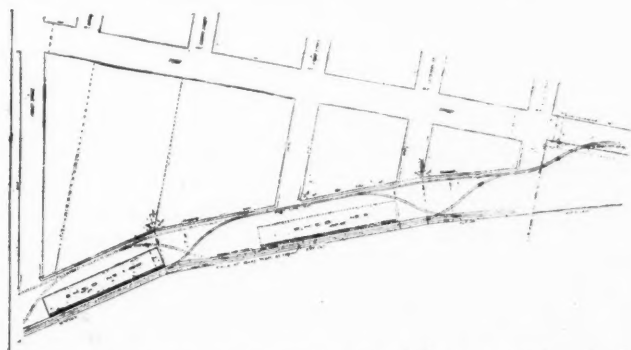
Albany, N. Y.—Members of the Joint Conference Board of the Amalgamated Association of Street Railway Employees of America from many cities outside Greater New York have requested the Public Service Commission to take up the question of installing certain improvements to safeguard employees in operating cars and the public using them. These suggestions include the equipping of double truck cars with air brakes, the vestibuling of rear ends of closed cars, placing of sand boxes on all cars, discontinuance of open cars with running boards and substituting a convertible type with an aisle through the center, stools for motormen and conductors, block signal systems on inter-urban lines, uniform headlights, and construction of storm shields on open cars.

### Heating System Installed in Street Cars.

Indianapolis, Ind.—Welcome news for its patrons has come from the office of the Indianapolis Traction and Terminal Company, where it is announced that the twenty-five new street cars which are soon to be placed in service will be heated with hot air. The cars now in service have a hot water heating system. The new cars are to have what is known as the blower hot air system, in which hot air will be forced through ducts along the floor by means of a fan controlled by a motor. These ducts will be perforated, and, according to the company, the new system appears have some advantages over other systems on account of the additional ventilation afforded. Experiments with the new heating system have been conducted by the company for several weeks, one car having had the equipment in use. The heaters, according to the company, are designed for anthracite coal or coke, but not specifically intended for briquettes, such as are now being used with dissatisfaction to the car crews and public. The company says that with the twenty-five new cars it will have 313 closed cars in service. It also has about two hundred of the open type of cars, which are used during the summer months. An official has told the board of public works that the company does not contemplate adopting the pay-as-you-enter system of cars, because in many cities where such cars are used they have met with some objection from the patrons. He has told the board, however, that the cars already in service could be adapted to the pay-as-you-enter plan without much difficulty.

### Plan Belt Line Along Quay.

Oakland, Calif.—The quay wall that is being constructed by Healy & Tibbetts, contractors, is nearing completion, and a few more months will see the contract finished. Tentative plans for the roadway and belt line to extend along the quay wall which have been drawn by the city engineer's office preparatory to immediate action upon the completion of the concrete wall, are herewith shown. This belt line will extend from Myrtle street to Broadway along the San Antonio estuary. Portable cranes will be used in conjunction with the belt-line railway. Big ships can an-



ROADWAY AND RAILROAD ALONG QUAY.

chor right up to the concrete wall, the portable cranes will swing off the freight in ten-ton lots and into the numerous freight sheds that will dot the wall. From the sheds another crane will deposit the freight into wagon or train. The facilities for handling freight will be unsurpassed. The Livingston street wharf, already completed, will also be reached by the belt line railway eventually. At present it is planned to swing the belt line to the Southern Pacific tracks at First street near Broadway. From this point the freight can be transferred for interior or eastern points. It is estimated that the wharfage capacities of this section will be trebled, and with the facilities for handling freight afforded by the municipal belt line railroad and movable electric cranes, the capacity of San Francisco bay to handle traffic will be increased many times.

## MISCELLANEOUS

### Lights Are to Blink Curfew.

Napa, Calif.—Henceforth the fire bell will not toll the curfew warning to the younger generation of the city, and send them scurrying to the parental tree for the night. Instead the street lights of the city will blink the warning. The City Council have perfected an agreement with the Pacific Gas and Electric Company and with the Great Western Power Company whereby they will "blink" the lights controlled by each at 8 o'clock as a curfew warning. It was decided that the tones of the fire bell could not be heard clearly enough over the city.

### Public Market a Failure.

Decatur, Ill.—Mayor Dinnen declares that the Decatur public market, established fifteen months ago in an effort to reduce the high cost of living, has proved a failure and probably will be abandoned. Farmers and hucksters are credited with charging "store" prices for their products in the public market.

### Would Restrict Skyline Signs.

New York, N. Y.—The Mayor's Billboard Advertising Commission, headed by Robert Grier Cooke, President of the Fifth Avenue Association, after a meeting at the Aldine Club announced that it would be ready soon to make a report to the Mayor recommending radical restrictions on advertising signs, especially on billboards. Members of the commission said they had been greatly impressed by the recent storm with the necessity of protecting pedestrians from skyline signs. The commission will protest against the present method of constructing billboards close to the ground. In some cities, it will point out, billboards are required to be built three feet from the ground, so as to prevent offenders against public decency from depositing filth and rubbish behind them.

### City May Be First to Run Cafeteria.

Tacoma, Wash.—Probably the first cafeteria ever operated by a municipality will be opened by the Metropolitan park board early this spring at the Point Defiance pavilion. On the first of the year the board took over all concessions at the pavilion including the boating dock, and it will operate them with the assistance of a superintendent. In addition to the money that will be spent by the board in improving the pavilion, \$5,000 will be spent in erecting a car station with public comfort facilities near the street car entrance to the park. Plans for this building were prepared by Hare & Hare, of Kansas City, special park architects, several years ago. The present board will follow out the original plans to a great extent. Estimates for the work are being prepared now by the board and bids will be asked for soon. Food at cost will be the board's policy in operating its pavilion, and an effort will be made to make the cafeteria one of the park's main attractions. The boats for rowing that were used last year will be overhauled and new ones added.



## LEGAL NEWS

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Federal Courts—Following State Decision.

*City of Manchester, N. H., v. Landry.*—A decision of a state court of last resort that a municipal corporation, acting through a subordinate statutory organization, may be liable for negligence in the construction of public works, is binding on a federal court in a case subsequently arising, where the circumstances are such as to raise the same question of law.—United States Circuit Court of Appeals, 199 F. R., 882.

#### Water Rates—Ordinance Surrendering Governmental Powers.

*Batchelder v. Hartwig, Mayor of Hood River.*—An issue of bonds for the construction of water works was authorized, and thereafter the council adopted an ordinance attempting to fix the water rates, taking from the people the right to sell or lease the water plant, or to grant any water franchise during the life of the bonds. Held, that while a city contracting in its proprietary capacity may make contracts authorized by charter and necessary in carrying out its purposes, even though the terms of such contracts extend beyond the term of the officer acting, that as the ordinance attempted to limit governmental or legislative powers its terms were ultra vires and void.—Supreme Court of Oregon, 128 P. R., 439.

#### Injuries from Negligent Use of Street.

*Ehrlich v. City of New York.*—It is not negligence per se for a boy 12 years old to play on the sidewalk, though he sees a cart approaching, and he may assume that the driver will avoid striking him.—New York Supreme Court, 138 N. Y. S., 294.

#### Public Improvements—Liability on Bond.

*Contractors' Supply Co. v. City of New York et al.*—One furnishing materials to the contractor for constructing sewers for a city is not entitled to a judgment against the sureties on the bond given by an assignee of the amount due under the contract for the release of materialmen's liens, which was conditioned that the assignee should pay any judgment "recovered in an action to enforce such alleged lien"; plaintiff not having recovered any judgment against the assignee.—New York Supreme Court, 138 N. Y. S., 242.

#### Graduated Business License—Discrimination.

*Wayne Mercantile Co. et al. v. Commissioners of Mount Olive.*—An ordinance, imposing a business license tax on merchants, storekeepers, or dealers in goods, wares, or merchandise, graduated according to sales among five classes, was valid and not objectionable for non-uniformity because it was not based on percentages.—Supreme Court of North Carolina, 76 S. E. R., 690.

#### Annexation of Territory—Unplatted Lands.

*State ex rel. Dawson, Atty. Gen., v. City of Wichita et al.*—A tract of unplatted lands exceeding 20 acres not lying wholly or mainly within the limits of a city cannot be added to or brought into the city by ordinance passed under the provisions of Gen. Stat. 1909.—Supreme Court of Kansas, 128 P. R., 369.

#### Acceptance of Contract—Liability of City.

*Price v. City of Elgin.*—Local Improvement Act provides that no contractor, who agrees to be paid out of special assessments, shall have any claim or lien upon the city except from the collection of special assessments, and requires the city to collect the assessments until the contractor be paid, and provides that the contractor may enforce his right to have such collections made for his payment by mandamus or injunction. Held, that the re-

fusal of a board of local improvements to certify to the completion and acceptance of the work as provided in Section 84 would not make the city liable to the contractor; the contractor's remedy to compel payment of his claim being mandamus or injunction as provided.—Supreme Court of Illinois, 100 N. E. R., 133.

#### Ordinances—Construction.

*City of St. Louis v. Chicago House Wrecking Co.*—A city ordinance, authorizing the Louisiana Purchase Exposition Company to use one of the city parks for its exposition, provided that the city's board of public improvements should have power to regulate the construction of all sewers, drains, and conduits of any kind, and the laying of water pipes or fixtures, that no such work should be done without the approval of the board, and that "all such sewers, drains, conduits, pipes, and fixtures should become and be the property of the city." The succeeding section required the Exposition Company, within 6 months after the close of the exposition, to clear the site, and within 12 months restore the park according to plans to be approved by the board. Held, that the ordinance was not to be construed as vesting in the city, after the exposition, title only to such sewer and water pipes, tubes, drains, conduits, and appertaining fixtures as were necessary to the park as restored, but that all of the sewer and water pipes, drains, etc., and fixtures, except those above ground in the buildings, belonged to the city.—United States Circuit Court of Appeals, 200 F. R., 239.

#### Liability on Contracts for City Departments.

*Richardson v. City of Mt. Vernon.*—The Mt. Vernon charter requires the board of fire commissioners to present an estimate of its necessary expenses for the fiscal year. Section 134, as amended by Laws 1908, limits the amount that may be appropriated for the fire department, and provides that the money shall be disbursed for the particular purposes for which the appropriation is made. Section 211a, as amended by Laws 1900, provides that the amount appropriated for the fire department shall be placed in a fund designated for the maintenance of that department, which fund shall not be used for any other purpose than specified in the charter. Section 218, as amended by Laws 1903, requires the city treasurer to pay to the treasurer of the board of fire commissioners each month one-twelfth of the appropriation, and provides that the treasurer of the board shall pay all claims against the board, which shall be audited by the board. Held, that the city discharges its full liability when it pays the appropriation to the treasurer of the board, and is not liable for the price of property purchased by the board, but that the seller, if the board refuses to audit and direct the payment of his claim must proceed by mandamus or otherwise against the board itself.—New York Supreme Court, 188 N. Y. S., 702.

#### Defective Streets—Place of Accident.

*English v. City of Ft. Worth et al.*—Where in an action for injuries on a defective street, the notice described the place of the accident as at or near the crossing of C. avenue and Twenty-third street, and near a grocery store whose number was 2308 C. avenue, and there was evidence that the accident happened at the crossing of C. avenue and Twenty-second street, about 600 feet away, and that the conditions at or near the crossings were similar, the question whether the intersection of Twenty-second street was within the notice was for the jury, and their finding that the place of the accident as stated in the notice was not substantially proved was justified.—Court of Civil Appeals of Texas, 152 S. W. R., 179.

#### Improvements—Special Tax Bill—Validity.

*Granite Bituminous Paving Co. v. Parkview Realty & Improvement Co. et al.*—Under the St. Louis city charter, making special tax bills prima facie evidence of a proper assessment, a special tax bill was properly adjudged valid as against the claim that in making the assessment a tract of land not subdivided was arbitrarily divided into two lots, and that two distinct tax bills were issued against it.—St. Louis Court of Appeals, Missouri, 151 S. W. R., 487.

## NEWS OF THE SOCIETIES

### Calendar of Meetings.

February 11-13.

MINNESOTA SURVEYORS AND ENGINEERING SOCIETY.—Annual convention, St. Paul, Minn. Charles A. Forbes, secretary, 91 Kent street, St. Paul.

February 13-14.

NORTH DAKOTA SOCIETY OF ENGINEERS.—Annual Meeting, Bismarck, N. D. E. F. Chandler, Secretary, University of North Dakota.

February 19-21.

IOWA ENGINEERING SOCIETY.—Annual meeting, Sioux City, Ia. S. M. Woodward, Iowa City, Ia.

February 19-21.

INDIANA SANITARY AND WATER SUPPLY ASSOCIATION.—Annual meeting, Indianapolis, Ind. W. F. King, secretary, Indianapolis.

February 24-March 1.

ASSOCIATION FOR STANDARDIZING PAVING SPECIFICATIONS.—Fourth annual meeting, Fort Pitt Hotel, Pittsburgh, Pa. John B. Hittell, secretary-treasurer, 5917 Winthrop avenue, Chicago, Ill.

February 26-March 8.

CLAY PRODUCTS EXPOSITION. Coliseum, Chicago.

March 3-5.

NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION.—Annual Meeting Green Room, Congress Hotel and Annex, Chicago, Ill. W. P. Blair, Secretary, 824 Brotherhood of Locomotive Engineers' Building, Cleveland, O.

March 11-12.

ILLINOIS WATER SUPPLY ASSOCIATION.—Fifth Annual Meeting, Urbana-Champaign. Edward Bartow, Secretary, Urbana-Champaign.

INTERNATIONAL ROADS CONGRESS.—Third Congress, London, England. W. Rees, Jeffreys Secretary, Queen Anne's Chambers, Broadway, Westminster, London. S. W.

March 19.

BOSTON SOCIETY OF CIVIL ENGINEERS.—Annual meeting, Boston, Mass. S. E. Tinkham, secretary, 715 Tremont Temple, Boston.

### Minnesota Surveyors' and Engineers' Society.

The program for the eighteenth annual convention, Hotel Ryan, St. Paul, February 11-13, has been issued as follows:

TUESDAY, FEBRUARY 11, 9:30 A. M.—President's Annual Address. Hon. W. C. Fraser, St. Paul; Report of Secretary-Treasurer, Chas. A. Forbes, St. Paul; Address of Welcome. Hon. H. P. Keller, Mayor of St. Paul; Locating Lost Corners and Laws Affecting Same, S. F. Kennedy, Princeton, Minn.; Reminiscences of Ye Olde Time Surveyor, Nathan Butler, Minneapolis; Appointment of Committees; Lunch. 1:45 P. M.—Some remarks on Bank Erosion of Streams, with brief description of protective works, Walter F. Brooks, M. Am. Soc. C. E., Mankato; St. Louis County Bridges, E. K. Coe, Engineer of Highways, Duluth; Concrete Road Construction (as seen in Winona County), O. B. Leland, District Engineer, State Highways; Road Construction and Concrete Pavements, Thos. F. McGilvray, C. E., Duluth, Minn.; Road Laws, Geo. W. Cooley, State Engineer, Minnesota Highway Commission; Construction of Concrete Highways (illustrated by pictures), J. H. Chubb, C. E., Chicago, Ill.

WEDNESDAY, FEBRUARY 12, 9:30 A. M.—Railroad Accidents—Their Causes and Remedy, D. J. Jurgensen, Chief Engineer, Minnesota Railroad and Warehouse Commission; Ore Docks, Max Toltz (Toltz Engineering Co., St. Paul); Sewerage and Sewage Disposal, John Wilson, City Engineer, Duluth, Minn.; the Mississippi High Dam, by Capt. G. W. Freeman, Assistant Engineer, United States Engineer, in charges of high dam, and Adolph F. Meyer, Consulting Engineer, St. Paul. 1:30 P. M.—The Twin Cities and the Mississippi, Francis C. Shenhon, Dean of the College of Engineering, University of Minnesota; Electric Light and Gas Rates, J. F. Druar, O. E. Claussen Engineering Co., St. Paul; Collection and Disposal of Municipal Wastes, Geo. H. Herrold, Department of Public Works, St. Paul; Northern Minnesota Drainage Problems, Prof. W. R. Hoag, Drainage Engineer; Play Grounds, C. T. Booth, Superintendent Park Play Grounds, Minneapolis; Play Grounds and Their Relations to Municipal Life, Arthur W. Dunning, M. D., St. Paul. Election of Officers. Banquet at 7:00 P. M., Hotel Ryan, courtesy of Civil Engineers' Society of St. Paul, J. H. Armstrong, president.

THURSDAY, FEBRUARY 13, 9:30 A. M.—Leave Ryan Hotel via Snelling-Minnehaha car for Fort Snelling high dam and Minnehaha Falls, in charge of G. L. Wilson, Engineer, Maintenance of Way, Twin City Rapid Transit Co., and courtesy of Capt. G. W. Freeman, Engineer in Charge of high dam. Dutch Lunch. Minneapolis, 2:00 P. M.—College of Engineering, University of Minnesota, guests of Francis C. Shenhon, Dean; Minneapolis Water Filtration System, J. A. Jensen, Assistant Engineer, in charge; The City Beautiful—Its Growth and Development (illustrated by projected maps and slides), Arthur Nichols, of Messrs. Morell & Nichols, landscape architects and engineers, Minneapolis.

Surveyors and civil engineers are especially invited.

Discussion follows reading of all papers.

### Municipal Officials of Montana.

At a meeting at Butte, January 16, the following planks were formally indorsed by the city officials, and an effort to have them enacted will be made by the legislative committee:

Regulation of lighting, heating and water concerns, and authority for the municipal construction and ownership of such plants.

To remove the limit upon the amount for which cities may make contracts without advertising for bids, and permitting cities to do themselves such work as they see fit.

To require affidavits from all bidders on contract, guaranteeing no collusion

with other bidders and no interest in the contracts of any other person or firm.

To amend the law so that incorporated cities will receive the 50 per cent. of the money received from the licenses of saloons within their corporate limits that now goes to the counties.

To require that all clubs, except those organized by established fraternal, business or commercial organizations, must first secure a license for the sale of liquor before opening a bar.

A law preventing the complainant in any action against any city or town being filed before a bond in the sum of \$250, with sureties approved by a district judge, is given to pay costs if the plaintiff loses.

Increasing the salaries of mayors of cities of the first class to \$4,000 and of mayors of cities of the second class to \$2,000.

Upon the motion of Mayor R. R. Purcell, Helena, who called the meeting to order, Mayor James M. Rhodes, Missoula, was elected permanent chairman of the meeting. N. E. Entrikin, City Club of Livingston, was elected secretary.

### Ohio League of Municipalities.

At the first annual convention, Columbus, January 22, Mayor Henry T. Hunt of Cincinnati was made president to succeed Mayor Newton D. Baker of Cleveland, whose term expired, and other officers were elected as follows: Vice-presidents, C. L. Schreiber of Toledo, C. H. Spencer of Newark, M. A. Gemunder of Columbus and E. G. Martin of Norwalk; secretary-treasurer, Mayo Fesler of Cleveland; new members of the executive board, Mayor Newton D. Baker of Cleveland, Mayor T. W. Pape of Lorain, and Mayor A. W. Mithoff of Lancaster.

The central point around which the fight turned was the Smith one-per-cent. tax law, and, although the conference urged that certain of its provisions be modified so as to secure greater elasticity, the central idea of tax rate limitation was indorsed and a demand made for a further trial of the law.

Sharing with the tax limitation law, the attacks of the municipal officials was the Crosser initiative and referendum act in its present form. The central principle, too, was indorsed, but many changes were advocated. One of these was urged by Professor A. R. Hatton of Cleveland, who wished to give councils the right to declare any ordinance an emergency measure on two-thirds vote. Another amendment needed, it was urged, was a provision whereby all ordinances necessary in making improvements might be put through during the suspension of the first ordinance while waiting a possible referendum. Both ideas were adopted and will be sent to the general assembly.

The attack on the Smith one-per-



cent. law consisted in a recommendation that the state levy should be excluded from the ten-mill limitation, that interest and sinking funds be excluded from both ten and fifteen-mill limitations, that all interior maxima be stricken out and that municipalities be given majority representation on budget commissions in counties where the combined municipal duplicates exceed duplicates of other taxing districts. In such cases the place of the county auditor on the budget commission is to be taken by the solicitor of the largest municipality. The latter provision aroused a bit of hostility on the part of school board representatives who were present, and Martin A. Gemunder of Columbus announced that the school boards of the state would fight it.

Discussing the substantial victory in favor of the retention of the Smith law, Mayor Hunt asserted that Cincinnatians were very well pleased.

On the tax limitation committee were A. Julius Freiberg of Cincinnati, Mayor Frank Rockwell of Akron, M. A. Gemunder of Columbus and City Solicitor C. L. Schreiber of Toledo.

Home rule in civil service was strongly urged, and in that respect principles of the Freibold measure, now before the assembly, were indorsed.

The committee, of which City Solicitor Alfred Bettman of Cincinnati is president, was directed to finish the work of drafting the three optional home rule laws for presentation to the general assembly.

One of the concluding features of the program was an address by Mayor Brand Whitlock of Toledo on his recent visit to Europe and the results of his studies of European municipal government.

#### Arkansas Municipal League.

Mayor Charles E. Taylor presided at the conference of mayors, city attorneys and aldermen in session at Little Rock, January 16, for the purpose of framing legislation to permit municipalities to issue bonds for improvements. It was decided to make the organization permanent, Mayor Kline of Texarkana, City Attorney Hale of Hot Springs, Mayor Frauenthal of Heber Springs and Mayor Smith of Magnolia being named a committee to prepare a constitution and by-laws. The bill to be submitted to the legislature and which was drawn by City Attorney Hale was referred to a committee composed of James F. Read and H. C. Spear of Fort Smith, Mayor C. N. Johnson of Stuttgart, City Attorney R. M. Mann of Texarkana, and Sam W. Reyburn, Moorhead Wright, Ashley Cockrill and Mayor Charles E. Taylor of Little Rock. The visiting officials were entertained by Little Rock officers at luncheon at which speeches were made by Linn Hemingway, J. J. Doyme of Conway, H. F. Auten, J. S. Read of Fort Smith, Mayor Kline of Texarkana, ex-Mayor W. E. Lenon of Little Rock and former Senator Turner of Jonesboro.

#### Mayors' Society of New Jersey.

At a meeting at Trenton, January 14, Mayor Frederick W. Donnelly of Trenton was elected president, and named five vice-presidents as follows: Mayor Jacob Haussling of Newark, Mayor Julian Gregory of East Orange, Mayor George W. Seger of Passaic, Mayor Joseph H. Firth of Phillipsburg, and Mayor A. F. McBride of Paterson.

The society passed a resolution favoring legislation for the abolition of railroad grade crossings under the supervision of the public utility commission. One of the points in the resolution strongly advocated by the mayors is that the railroads should bear the entire cost of the elimination of the crossings.

Governor Wilson and the members of the present legislature will be communicated with by the society, urging this kind of a law.

Another proposition which the society wants enacted into law would require the filing of the names of mayors of every city in the state with the secretary of state. No such list is now available. The society also wants the names of the municipal clerks filed with the secretary of state.

Mayor Frank J. Murray of South Orange was selected as secretary-treasurer of the society.

### PERSONALS

Polglaze, R. A., formerly connected with the Tuscaloosa, Ala., water works, has been elected Superintendent of the water works at Gadsden, Ala.

Smith, Capt. Philip T., New Haven, Conn., has been appointed Chief of Police.

Randolph, S. A., Aberdeen, Wash., has been appointed Superintendent of the water works in place of Edward McGillis, resigned.

Swain, George F., professor of civil engineering at Harvard University, and for many years head of the Department of Civil Engineering at the Massachusetts Institute of Technology, was elected president of the American Society of Civil Engineers at the annual meeting of the organization in New York.

Mulvaney, L. T., Wapato, Wash., has been appointed Superintendent of Water Works.

Hutchinson, Capt. S. D., Milan, Tenn., has been re-elected Chief of Police.

Smith, Lewis E., Pasadena, Cal., has been named City Engineer, in place of City Engineer Van Ornum, resigned.

Caulfield, John, St. Paul, Minn., who has been secretary of the Water Board for only two years, has resigned to become general advisor of the Board. John C. Flanagan becomes secretary.

Smith, C. H., Gardiner, Me., has been appointed member of the Board of Health for three years.

Wing, G. P., Nashua, N. H., has been elected City Engineer, succeeding E. O. Hathaway.

Rinehart, E. U., Baltimore, Md., has been appointed Assistant Engineer in the Water Department of that city.

The following mayors have been elected:

#### GEORGIA.

Bowdon.....G. W. Burson, Jr.  
Canton.....J. A. McLain  
Harlem.....E. D. Clary  
Flovilla.....Hon. W. B. Dozier

#### DELAWARE.

Dover.....Enoch Clark

#### TEXAS.

Rice.....J. W. Santh

Woonsocket, R. I.—Appointments of city officials have been made as follows: Streets and Bridges—Ovila Dulude, William Howard, Charles D. Southwick; Street Lights—George H. Emmott, William Howard; Finance—Abraham Colitz, Azaire J. Meunier, Richard J. Hill, Alderman William Howard; Fire Department—Frank Girard, Louis J. Archambault, Wilfrid J. Mathieu, Alderman Chas. D. Southwick; Highways—Azaire J. Meunier, Frank Girard, Fred M. Buxton, Alderman Ovila Dulude; Police—James F. Dolan, Frank Girard, Felix Gariepy, Alderman James F. Carroll.

Little Falls, N. Y.—Mayor Frank Shall has made the following appointments: Commissioner of Public Works, Edward H. Kingsbury; Fire and Police Commissioner, Robert Nolan; Health Commissioners, Dr. William P. Earl, James E. Dingman; City Clerk, Matthew A. Leahy; Finance—Aldermen Walrath, Reardon, Grossman; Street Lighting—Aldermen Bronner, Tanzer, Reardon.  
Bristol, N. J.—The following city officials have been appointed: Health, Sanitation and Poor—Dr. J. De B. Abbott, Robert King, C. G. Young, Dennis J. Mulligan, G. L. Williams; Fire Protection—Gustav A. Rathke, C. G. Young, Harvey S. Rue, and Charles S. Singer; Police Committee—George W. Buckley, Robert B. King, Louis Spring, Maurice Keating, H. Hoffman; Streets and Highways—Joseph R. Grundy, Louis Spring, George W. Strauser, John J. Kilcoyne, Charles S. Singer; Finance and Public Property—James Wright, Griffith L. Williams, Dr. De B. Abbott, Martin J. Fallon, W. Furman Young.

Metuchen, N. J.—Mayor Clark has made the following appointments: Police—E. H. Vreen, H. F. Sanford; Water—C. B. Veghte and H. B. Johnson; Streets—E. Soper and C. B. Veghte; Finance—H. B. Johnson and D. D. La Forge; Lights—D. D. La Forge and E. H. Vreen.

Saginaw, Mich.—The following officials have been appointed: Water Board—Louis Smith; Board of Health—Theodore F. Westervelt; Board of Park and Cemetery Commissioners—Ora R. Fowler; Fire Department—O'Neill, Graebner, Johnson; Pavements and Sewers—Asbeck, Nothelfer, Schuch, Henry, Ferris; Streets—Phoenix, Cantwell, Otto; Clerk, Wm. H. Barton; Electrician Wm. Phoenix; Engineer, Charles E. Nagle; Health Officer, Dr. W. J. O'Reilly.



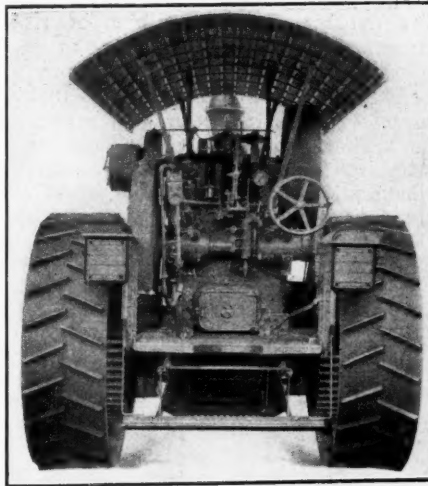
## MUNICIPAL APPLIANCES

### Reeves Grading and Hauling Engines.

Reeves & Company, Columbus, Ind., now a division of the Emerson-Brantingham Company, manufacture the Reeves traction engine. The distinguishing feature of the engine is that it has two simple cylinders with pistons connected to the same crank shaft but at different angles. This prevents the engine from stopping on dead center, and the consequent provision of a heavy flywheel with clutch transmitting power to the traction gear is unnecessary. The Reeves engine starts slowly, just as a locomotive does. On the clutch type of traction engine the flywheel may be running as high as 250 revolutions per minute when power is applied to the gear. Under such conditions an engine starts forward with a jump, and may strip its cogs or do other damage. The advantage of the Reeves device, when the engine is pulling a grading machine which requires constant starting and stopping, is obvious. To afford close control of the engine the throttle is opened and closed by an overhead rod connecting with a bar supported by the cab posts. This bar has a long lever attached to either end so the throttle can be opened or closed from either side of the platform.

The Reeves 25-horse-power engine has a large firebox, 49 inches high, 33 wide, and 48 long. The grate area is 11 square feet. There are 70 2-inch flues, 90 inches long. The heating surface of flues and firebox is 333 square feet. The dome is 20½ inches high, diameter 20, cubic contents 4 square feet. The cylinders are 7 inches in diameter, 13 inches long. The speed is 2.5 miles per hour. Height from top of stack, 11 feet 3 inches; length, 18 feet 6 inches; weight, 16 tons. The traction wheels have a 24-inch face, and are 76 inches in diameter.

Perhaps the second feature of importance in a traction engine is the traction gear. The crankshaft pinion is 13½ inches in diameter; face, 6 inches; pitch, 2 inches, shrouded on the side. The intermediate gear has a diameter of 43¾ inches; face, 5 inches; pitch, 2 inches. The two bull pinions are 12 inches in diameter; face, 7¼ inches; pitch, 2¼. The two master gears, which transmit the power, to the hubs of the traction wheels are 50½ inches in diameter; face, 6½ inches; pitch, 2½ inches.



REEVES ENGINE—PLATFORM VIEW.

The front axle and bolster combines a ball and socket arrangement that permits unimpeded movement of the front wheels without strain on the boiler. The engine is short coupled, and the front wheels, 48 inches in diameter, cut far under the boiler. The hand guide wheel is of large diameter to give good leverage in steering. The worm-shaft is also of large diameter. The grooves are so deep the chains cannot jump. Tension springs at-

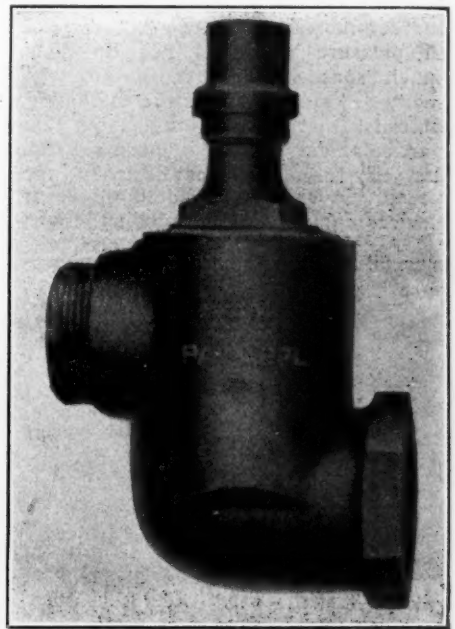
tached to the front axle keep them taut and quickly responsive to the operator. The boiler is well jacketed, the jacket extending over the wagon-top. The canopy cab extends over the entire platform, and the sides are curved down.

### Weed Exterminator.

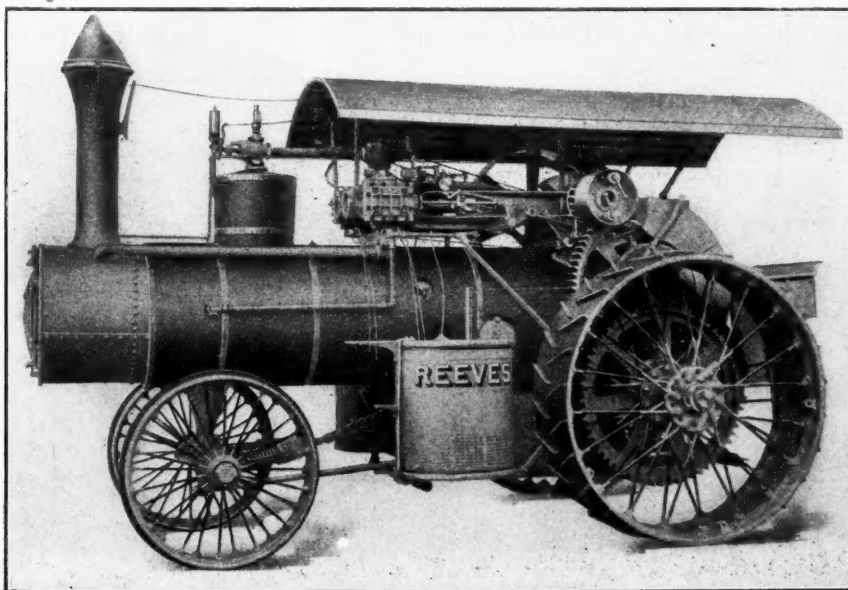
The Reade Mfg. Co., 1021 Grand street, Hoboken, N. J., claims to be the first manufacturer in the country to make a liquid for killing weeds, their product being called Herbicide. The killing of weeds is a municipal duty for three reasons: Weeds are unsightly and depreciate property values. They are injurious to health because they harbor mosquitoes. In agricultural districts it is the duty of cities to kill weeds in order that they may not spread to agricultural lands and thus injure the community. It is claimed that weeds can be eradicated with Herbicide more economically and effectively than by cutting.

### Street Sprinkling Valve.

The Water Works Equipment Co., 50 Church street, New York City, make a street sprinkling valve which is attached to fire hydrants for use in filling watering carts. Its use saves the hydrant from undue wear from frequent turning on and off of the main valve and, besides, keeps the ground in neat condition about the hydrant, there being no leakage or overflow of water and no occasion for men to tramp down the grass about the hydrant. As the valve has a soft seat, there is no water hammer and repairs are trifling. The valve should be screwed on the hydrant in the spring and water turned into hydrant at full opening and allowed to remain so until cold weather sets in. In this way the daily continuous opening of the hydrant destroying its working parts is obviated and the continuous wasting of water at the bottom of the hydrant is prevented.



STREET SPRINKLING VALVE.



REEVES 25 HORSE POWER CONTRACTORS' ENGINE.

## Vehicles for Municipal Service at the Thirteenth Annual Automobile Show.

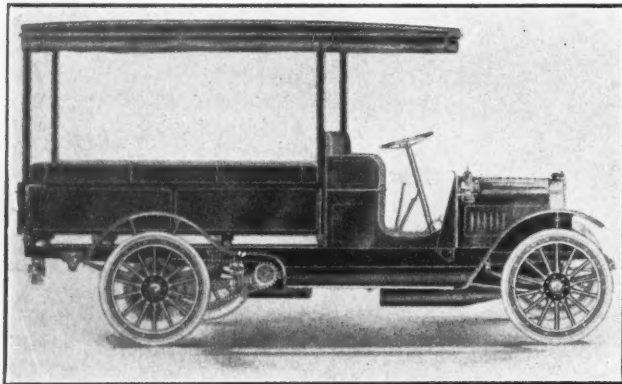
That motor vehicles have become of increasing importance in the municipal field during the past year has been apparent from the record of events chronicled in the Municipal Journal. In fire department circles the purchase of horse drawn apparatus is hardly considered now; automobiles have monopolized the field for police patrols; water works departments are using them for emergency repair wagons; the street cleaning departments of all large cities are considering the use of motor trucks, some having already adopted them; public works departments in cities doing work by the day labor plan have purchased dumping trucks. Hardly a week goes by when an advertisement for three or more automobiles from a single city is not recorded in the "bids asked for" columns of the Municipal Journal and as many as twenty-six vehicles have been advertised for in a single order.

ing cars by electricity were the most prominent novel feature. One of these devices, that of the United States Lighting & Heating Company, consists in a dynamo used in the place of the flywheel of the engine and a storage battery. In starting, current from the battery passes through the dynamo, which thus becomes a motor, starting the automobile at once under a good speed. In other systems the motor is placed in other situations, the battery and principle of operation being the same.

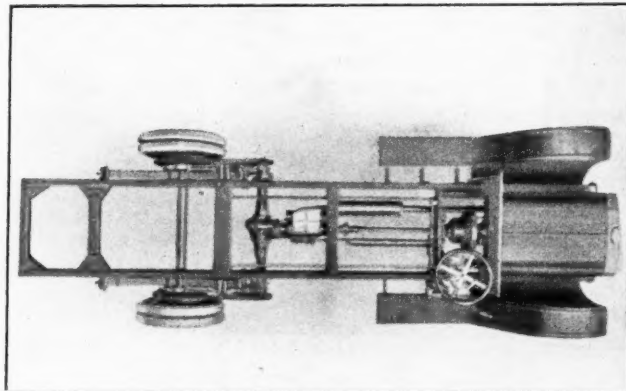
The effort to save in tire expense was evident in the exhibits of tire manufacturers. Many variations in detailed construction of pneumatic tires were noticeable and there seems to be an effort to bridge the gap between an ordinary pneumatic tire and the simplest form of a solid tire. An 8-inch pneumatic tire used by several fire departments is in its functions al-

trucks. The fact that almost any chassis may be used for almost any sort of a body and that there are manufacturers of bodies who do not make the chassis, but will fit almost any sort of body required to any suitable chassis, makes any attempt to classify the vehicles according to their uses a practical impossibility. However, there are some kinds of fire apparatus, notably pumps controlled by manufacturers who place only the complete outfit on the market. In the dumping truck line there are also makers who have developed chassis and body together, in the light of an intimate knowledge of the needs of the owner. The result is noticeable in a certain compactness of design such as will be seen in the White and Mack trucks for example. Without attempting to classify, the vehicles will be described under their names.

**Alco.** American Locomotive Works, 1886 Broadway, New York City. A 3½-ton truck with a removable body which slides off on releasing



ATTERBURY ONE-TON EXPRESS TYPE.



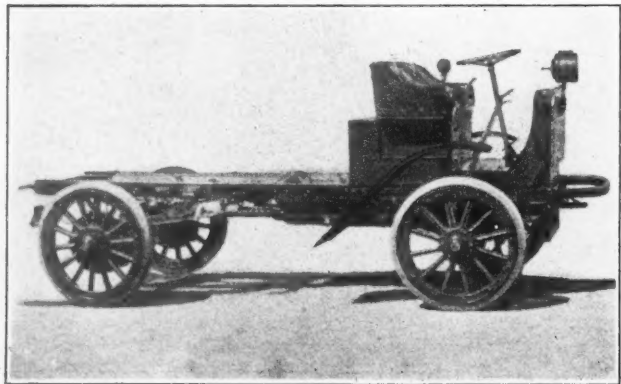
ATTERBURY THREE-TON CHASSIS.

It is with these facts in mind that the reader should consider the following account of the exhibits at the automobile show. There were two divisions, one for pleasure cars and one for commercial vehicles. The division of pleasure cars will not be given much space here, because, although many are purchased for the use of city officials, there is nothing about any particular car making it more valuable for city use than for ordinary purposes. It should be noted, however, devices for starting motors and light-

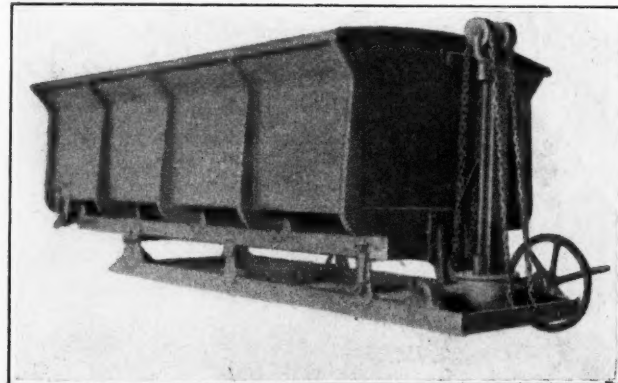
most a truck tire. Variations in the solid tire, made by cutting away parts of it, as in the Motz tire, may be regarded as an effort to make solid rubber perform the functions of a pneumatic tire. Pneumatic tires were shown by perhaps a dozen manufacturers little known in this field a year or two ago.

The commercial vehicle section contained the automobiles of most interest in the municipal field. For convenience of description these might be divided into fire apparatus and motor

a clutch. This body is designed to eliminate delays in loading and unloading, the purpose being to use two bodies for each chassis. When the truck is out on delivery the second body is being loaded. A sort of trailer is made which may be used to carry the body while the load is being collected. This body is made by the Hopkins Mfg. Co., New York City and Hanover, Pa. A 5-ton automatic dumping body, operated from the driver's seat. The tailboard opens as the body is lowered.

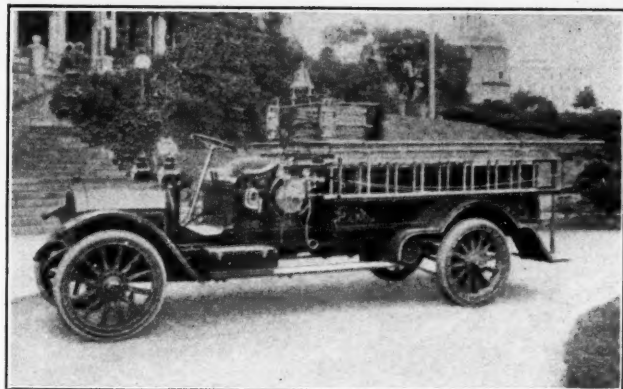


AUTO-CAR, 3,000-POUND CHASSIS.



BUDD DUMPING BODY.



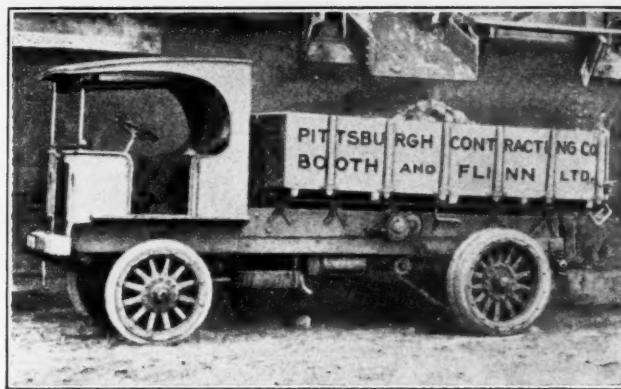


FEDERAL COMBINATION CHEMICAL AND HOSE.

**Atterbury.** Atterbury Motor Car Co., Buffalo, N. Y. A 3-ton chassis with a dumping body operated by hand screw. The weight of the 3-ton chassis is 5,600 lbs.; turns in 20-foot radius; has 143-inch wheel base; solid tires, wheels 36 by 4; 4 cylinders, 4.9 by 5.5; horse power, 38; cylinder, T-head cast in pairs; valve location, opposite; camshaft drive is gear; circulation by pump; radiator suspension, springs;

wagon for boards of education, police, libraries and other departments. The line of vehicles is a very complete one for general service, and the company is one of the oldest in the field, having been in business ten years.

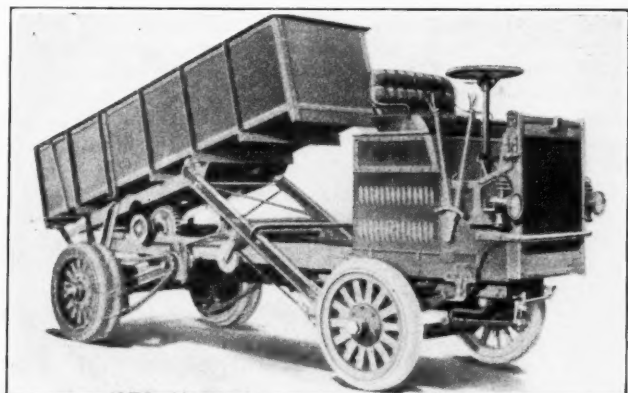
**Autocar.** The Autocar Company, Ardmore, Pa. This company makes one chassis of 3,000 pounds capacity. None of the bodies shown were made specially for municipal ser-



GARFORD SIX-TON DUMPING TRUCK.

by 4.5; horsepower, 18; 3 speeds; gear ratio, 6:1; ball bearings on rear axle.

**Budd.** The Budd Mfg. Co., Philadelphia, Pa. Three-ton steel dumping body, shown in the cut. Dumps by screw and nut, to which are attached side rods which carry a block at the top; chain passing over this is attached to wagon and chassis back of driver seat. As the block is raised by the screw the body is ele-



GENERAL MOTORS COMPANY FIVE-TON DUMPING TRUCK.

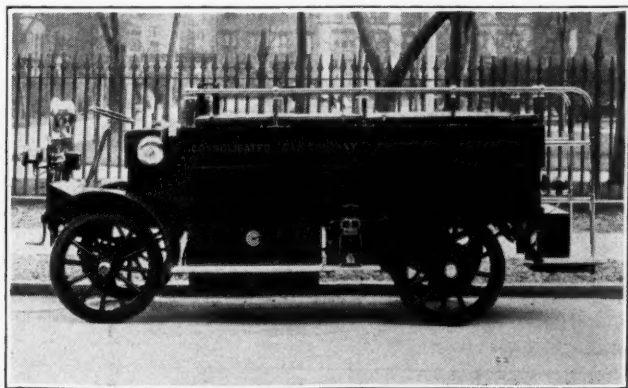
ignition, dual, fixed; carburetor, Stromberg; motor lubrication, splash and pressure; clutch, disk, gear set, selective; three speeds; chain drive; bearings, front ball, rear roll. A model C 2-ton truck with an express body was exhibited. A vehicle like this is suitable for general service in any department. Other models shown were a B 1-ton wagon, suitable for a waterworks emergency and repair wagon, and an A 1,500-pound wagon with a panel body, good for a light supply

vice but the photographs shown included ambulances, patrol wagons, chemical and hose wagons and sprinkling wagons. The exhibits included every working part of the engine and mechanism with casings cut away to show the details. The object of the company was to substantiate its claim that it employs only the finest materials and workmanship. The car has won severe service contests. The chassis weighs 3,300 pounds; wheelbase 97 inches; engine has two cylinders, 4.8



GARFORD TEN-TON DUMPING TRUCK.

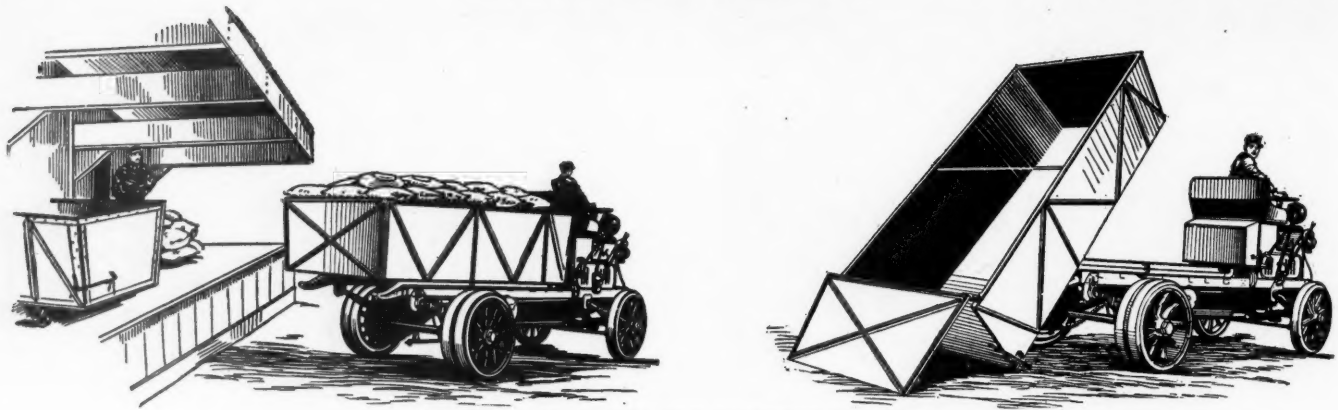
vated twice as fast. The body shown was classed as 3-ton capacity; larger sizes are made after the same design. Power may be used for dumping by sprockets and chain from transmission shaft. This is a very interesting proposition. If a contractor in an emergency should require a dumping truck he could purchase a chassis, having the choice of many types, bolt or strap the body to it, and be prepared for work in a very short time.



LANSDEN PUBLIC SERVICE WAGON.



LANSDEN AMBULANCE.



LOCOMOBILE DEMOUNTABLE DUMPING TRUCK.

**Croce.** Appleby & Krymer, 311 Halsey street, Newark, N. J. Combination chemical and hose wagons just from the shop built for a fire company in Asbury Park, N. J. Substantial truck design. Carries Boyd-Kanawha chemical tank, ladders, fire hose and usual minor equipment.

**Federal.** Federal Motor Truck Co., Detroit, Mich. Combination hose and chemical. One-ton chassis. Speed, 22 miles. Motor, 4 cylinders,  $4\frac{1}{2}$  by  $4\frac{1}{2}$ , 30 horsepower. One 35-gallon Badger chemical tank.

**Garford.** The Garford Company, Elyria, O. End-dumping 5-ton truck. Has low body; straight line drive; heavy torsion rod; dual rear wheels; Krupp steel springs; pressed steel frame; driver's cab, metal; accessible steering gear; motor alongside driver; four speed transmission; one very slow to permit easy starting; heavy steel bumper and protected head lights. The wagon body slides back before it dumps. Ten-ton truck. This is practically a tractor and a truck, but they are built to go together. Has short turning radius. The wagon body is carried by steel tired wheels.

**G. M. C.** General Motors Truck Co., Detroit, Mich. Truck with automatic dumping body, 5 tons capacity. The body is raised by the power of the motor transmitted through the intermediary of a gear box to the body raising winch drum, operated by self-locking worm and wheel, permitting power raising and power controlled lowering of the body. The raising and lowering is controlled by two hand

levers at the driver's seat. As the mechanism gets into action the body swings backward, the end gradually dropping and the forward end lifting until a suitable angle for dumping is reached. The weight of chassis is 7,600 lbs.; turning radius, 50 ft.; tires, 36 by 5; bore and stroke of cylinders, 5 by 5 inches; horsepower, 40; three speeds.

**Kissel-Kar.** The Kissel Motor Car Co., Hartford, Wis. Four-ton chassis with dumping body made by the Shadbolt Mfg. Co., Brooklyn, N. Y. Weight of chassis, 5,700 pounds; turns in 26-foot radius; wheel-base, 156 inches; tires, 37 by 5 inches; 4 cylinders, 4.9 by 5 inches; 38 horsepower; Stromberg carburetor; motor lubrications, splash; cone clutch; 4 speeds forward; roll bearings on rear axle. There is an auxiliary spring on rear axle which comes into play in emergencies.

**Knox.** Knox Automobile Co., Springfield, Mass. The Martin tractor, illustrated in MUNICIPAL JOURNAL, January 2, page 34.

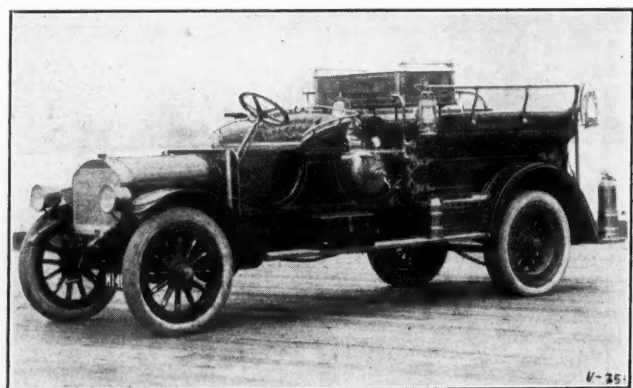
**Lansden.** The Lansden Company, Newark, N. J. An ambulance. Power derived from electric storage battery. Edison nickel steel. An emergency wagon for the Consolidated Gas Company, New York City. Both were mounted on a one-ton chassis. Frame—cold pressed steel, channel section, double heat treated, hot riveted; springs—chrome manganese steel, oil tempered; front axle—heavy die forged, I-beam type; rear axle—nickel steel, die forged, machine

set; bearings—Timken roller, in all wheels, and jack shaft; wheels—heavy artillery type, S. A. E. standard; tires special electric, make optional; motor—General Electric, guaranteed for 300 per cent. overload; controller—continuous torque type, four speeds forward and two reverse; resistance—extra heavy cast grid, street car type; drive—motor by pinion to bevel gear differential on jack shaft, enclosed in aluminum housing, running in oil, jack shaft to rear wheels by sprockets and chains; steering post—inclined, rigid, with controller handle below wheel; service brake—external contracting on main drive shaft; foot pedal at right of steering post interlocking with controller, shutting off power before brake takes effect; emergency brake—heavy internal expanding in rear hubs, pedal at left of steering post; battery box—underslung, steel frame, aluminoloyd covering, side hinged doors adjustable to horizontal position for access to batteries, which, mounted upon roller platforms, may be readily drawn out for attention; batteries—Edison nickel steel; accessories—horn or gong, amper-hour meter, electric dash lamps, electric tail lamp, license brackets, charging plug and cable, battery filler and full set of tools; bodies—all bodies of highest grade construction, leather trimmed.

**La France.** Hydraulic Truck Sales Agency, New York City. Manufactured by American La France Company, Elmira, N. Y. Six-ton truck which was illustrated in Municipal Journal January 23, p. 133. Weight chassis, 9,000 pounds; turning radius,  $22\frac{1}{2}$  feet; wheel base, 143 inch-

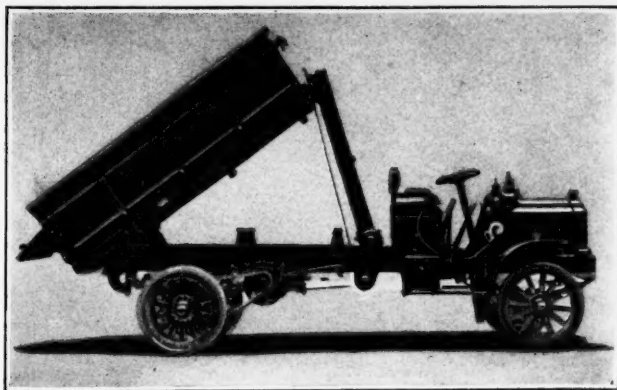


MACK 7-TON DUMPING TRUCK.



MACK COMBINATION CHEMICAL AND HOSE.





PACKARD 3-TON DUMPING TRUCK.

es; tires, 36 by 5 and 38 by 6 inches; 4 cylinders, 5.5 by 6 inches; 48.4 horsepower; gear set, friction; final drive, chain; rear axle, roller bearings.

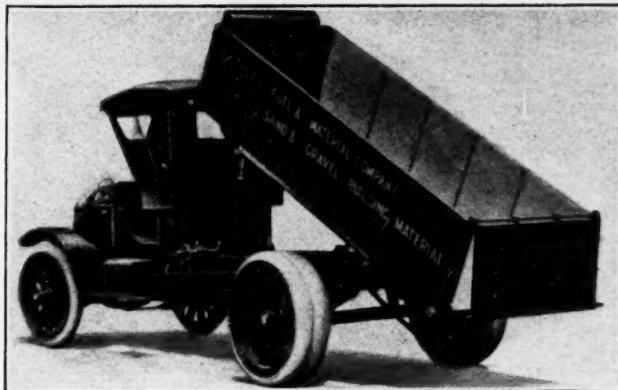
**Locomobile.** Locomobile Company of America, Bridgeport, Conn. Five-ton combination dumping and demountable body. When used as a demountable, the wagon body is pushed backwards moving on four rollers. When used as a dumper, the body is pushed backward until the second roller from the rear drops into a U-shaped casting bolted to the end of the side frames of the chassis. This gives an upward inclination of the front of the body; a rod pushes it further up until a suitable angle is reached. The engine has four cylinders, 5 by 6 inches; 40 horsepower; Schebler carburetor; motor lubrication, pressure; disk clutch; gearset, planetary; four speeds forward; gear ratio, 8.5; ball bearings on rear axle; gear set has ball and plain bearings.

**Mack.** International Motor Truck Co., Broadway and 57th street, New York City. Combination chemical and hose wagon built for New York fire department. Carries two Boyd chemical tanks with 1-inch chemical hose on reel. There are two compartments in the body for fire hose. Speed, 35 miles per hour. End dumping truck, 7 tons capacity. Dumps by power, forward end of body being lifted by endless chain to which it is attached. Engine has 4 cylinders 5.5 by 6 inches; horsepower, 48.4; cylinders have L heads and are cast in pairs; clutch is cone type; 3 speeds forward;

$\frac{1}{2}$  elliptic springs in front, platform in rear; roller bearings on rear axle. Transmission is a patented device which keeps gears in mesh at all times, thus, it is claimed, preventing all danger of stripping gears.

**Packard.** Packard Motor Car Co., 700 Grand avenue, Detroit, Mich. Three-ton end dumping truck. The body is of Budd manufacture described above. This truck carries 80 per cent. of its load back of the rear axle. Engine has 4 cylinders, 4.5 by 5.5 horsepower, 32.4; Eisemann magneto, automatic control; Packard carburetor; motor lubrications, splash; disk clutch; gearset, progressive; 3 speeds forward; plain and ball bearings in gearset; ball bearings on rear axle.

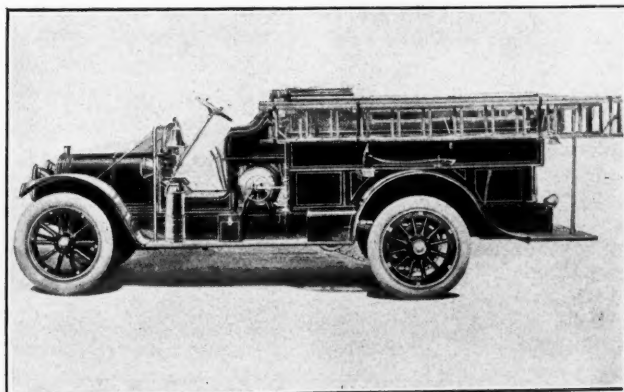
**Peerless.** Peerless Motor Car Co., Cleveland, O. Five-ton dumping truck. Dumps by mechanical device operated by the driver. The distinctive feature of this is a telescoping power screw. This avoids the necessity of extending the screw above the level of the body top. The screw is turned by a set of bevel gears driven by chain and sprockets. The sprockets are operated by another bevel gear driven from the transmission countershaft. When the body reaches its full upper position a tripping mechanism throws the jaw clutch which actuates the driving chain out of mesh and moves the lever in the driver's compartment back to neutral. The reverse movement of the lever starts the body down. The tail gate is controlled by a lever at the right of the driver's



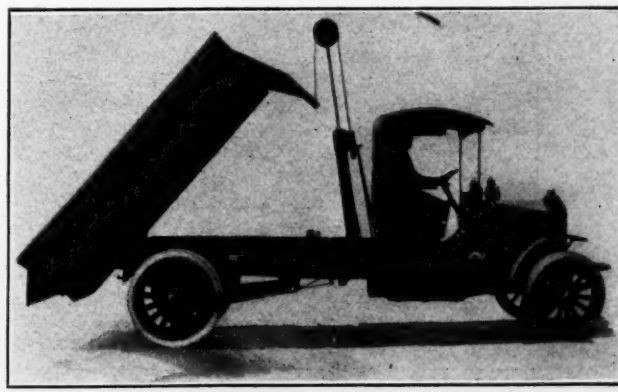
PEERLESS 5-TON DUMPING TRUCK.

seat. The weight of the chassis is 7,600 lbs.; turning radius, 25 feet; wheelbase, 151 inches; tires, 38 by 6 and 42 by 6 inches; four cylinder, 4.5 by 6.5 inches; 32.4 horsepower; cone clutch; 4 speeds forward; gear ratio, 105:1; roller bearings on rear axle.

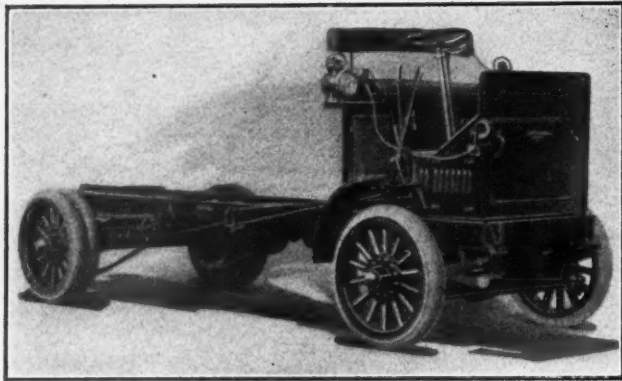
**Pierce-Arrow.** Pierce-Arrow Motor Car Co., 1695 Elmwood avenue, Buffalo, N. Y. End-dumping truck, 5 tons capacity. The dumping is done by hydraulic lift raising the front end of the body. Power is taken from the transmission through chain sprocket and driving clutch. The chain sprocket is mounted on two ball bearings, permitting the shaft to run constantly while the sprocket is idle. Clutch is secured to shaft by key. A lever mechanism is operated by pulling on a handle at the side of the driver, causing the clutch to slide along the shaft and engage with the chain sprocket. A rod releases the hooks which hold the body in position. Alongside the transmission is a countershaft mounted on ball bearings at each end and enclosed in a steel tubing. A chain drives from the sprocket at the forward end of the transmission to this countershaft at its front, and at the rear end the chain engages the sprocket on the oil pump. This pump is of the rotary-gear type, heavily built for the purpose and of ample capacity, and is connected to the cylinder of the hydraulic ram by means of a suction pipe into the top of the cylinder. The oil, under pressure, forces the piston up until the top of the stroke is reached, at which time a strike-plate hits three valves in the



POPE-HARTFORD COMBINATION CHEMICAL AND HOSE.



PIERCE-ARROW 5-TON DUMPING TRUCK.



UNIVERSAL 3-TON CHASSIS.

piston, opening them and allowing the oil to escape freely into the top portion, thereby holding the body at rest. The actual lifting of the forward end of the body is accomplished by flexible steel cable passing over two sheaves and under a central third sheave. The third sheave acts as a compensating device equalizing the lifting force on both sides of the body. The engine has four cylinders 4.9 by 6 inches, 38 horsepower; three speeds forward; worm drive; ball and roller bearings in rear axle.

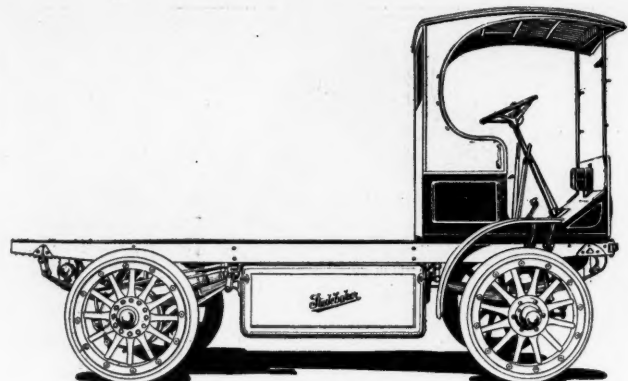
#### Pope - Hartford.

—Pope - Hartford Co., Hartford, Conn. Combination chemical and hose wagon. Carries 35-gallon Champion chemical tank. The body is unusually long—99 inches. The motor is 50 horsepower; 4 speeds forward; wheelbase, 142 inches; tires, 38 by 5½ and 39 by 6 inch; chrome nickel steel frame; electric starter and lighter.

**Speedwell.** Speedwell Motor Car Co., Dayton, O. Special 7-ton chassis with wood and iron end dumping body made by Thomas Wright, Jersey City. The chassis is a modification of the regular 6-ton chassis which has the following specifications: Weight, 7,200 lbs.; turning radius, 42½ ft.; wheelbase, 139 inches; tires, 36 by 6 inches; 4 cylinders, 5 by 5 inches; 40 horsepower; Eisemann magneto; cone clutch; 3 speeds forward.



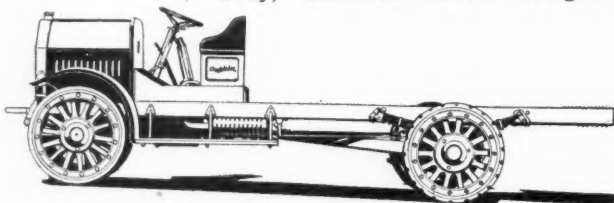
SHADBOLT DUMPING BODY.  
(Was Mounted on Kissel-Kar Chassis.)



STUDEBAKER 1-TON ELECTRIC CHASSIS.

**Studebaker.** The Studebaker Co., South Bend, Ind. Chassis of 3-ton gasoline truck, recently put on the market. Electric storage battery 1-ton chassis, new model, having worm drive. The worm drive is of German design and the chassis was one of distinct novelties of the show. A 2-ton gasoline delivery wagon, a ½-ton gasoline delivery wagon.

**Universal.** Universal Motor Truck Co., Detroit, Mich. A 3-ton chassis carrying a Budd dumping body, described above. Weight of



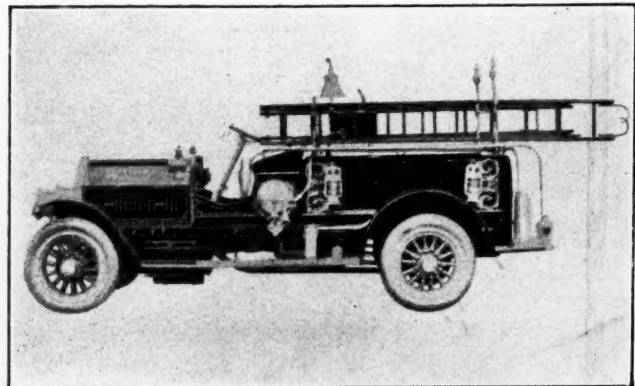
STUDEBAKER NEW 5-TON CHASSIS.

chassis, 5,400 pounds; turning radius, 18 feet; wheelbase, 132 inches; tires, 36 by 5 and 36 by 4 inches; 4 cylinders, 4 by 5.5 inches; 25.6 horsepower; Holley carburetor; 3 speeds forward; gear ratio, 12:1.

**Webb.** The Webb Company, Allentown, Pa. Triple combination car of the following description: Power plant, 6-cylinder T-head gasoline motor; speed, 50 to 60 miles per hour; hose capacity, 1,000 feet of 2½-inch hose; ignition, two separate and distinct systems, Bosch high tension magneto and spark coil on dash; cooling, water, gear pump; carburetor, Webb type or optional; control, hand throt-

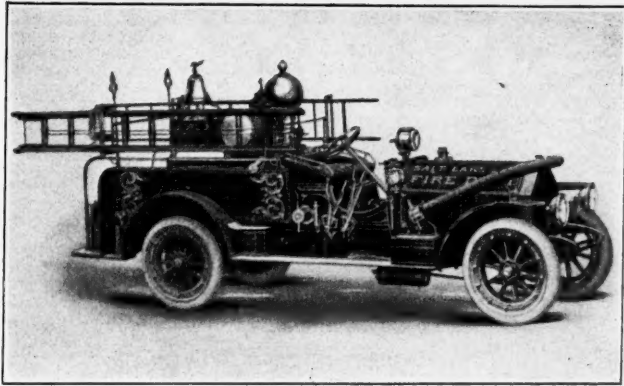
tle and spark on steering wheel; lubrication, sight feed mechanical ten-point oiler and splash system; gasoline capacity, 30 gallons; transmission, selective sliding gear, direct drive on high speed; speeds, four forward and one reverse; frame, extra heavy heat treated pressed steel with ⅝-inch nickel steel truss rods; bearings, roller and ball throughout; axles, 3-inch extra heavy I-beam shape, chrome nickel steel; axle clearance, front, 12 inches; rear, 16 inches; clutch, three disk with cork inserts; springs, semi-elliptic both front and rear, clipped for rebound; steering gear, worm and sector type, 18-inch wheel; tread, 56 inches; wheel base, 144 inches or long as required; wheels, special artillery fire department type; 40 inches front and 40 inches rear; tires, 40x6 inches, both front and rear, quick demountable type; brakes, interchangeable expanding brake on rear wheels; two external contracting brakes on jack shaft near sprockets; total braking surface, 400 square inches; drive, chain direct to rear wheels; driver's seat, for two men, leather upholstery; standards, two on rear of body with brass oil torches; railings, hand rails at rear and side of body made of heavy brass tubing; steps, full length side steps; wide step in rear full width between wheels; all steps covered with best grade corrugated rubber matting with nickel plated angle brass protecting edges; fenders, for front and rear of heavy pressed steel, thoroughly braced and designed to conform to the lines of the apparatus.

Combination chemical and hose of



WEBB COMBINATION CHEMICAL AND HOSE.





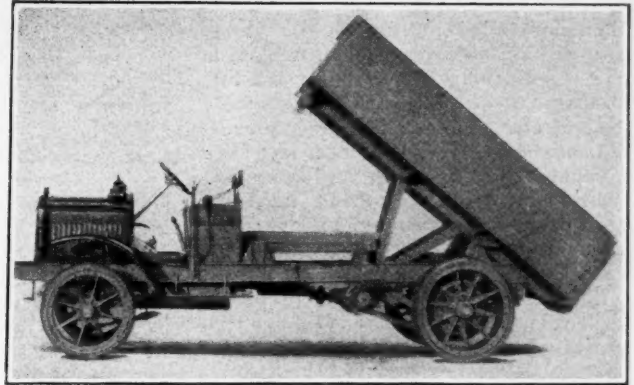
WEBB TRIPLE COMBINATION FIRE ENGINE.

the following description: Power plant, 4-cylinder T-head gasoline motor; speed, 50 to 60 miles per hour; hose capacity, 1,000 to 1,500 feet of 2½-inch hose; ignition, two separate and distinct systems; Bosch high tension magneto and spark coil on dash; storage battery, two 60 ampere 6 volts each, enclosed in water-tight case and placed in accessible position on the apparatus; cooling, water, gear pump; carburetor, Webb type or optional; control, hand throttle and spark on steering wheel; gasoline capacity, 15 gallons; transmission, selective sliding gear; direct drive on third speed; speeds, four forward and one reverse; frame, extra heavy heat treated pressed nickel steel; bearings, roller and ball bearings throughout; axles, 3-inch extra heavy chrome nickel steel drop forged, I-beam shape; axle clearance, front, 10 inches; rear, 16 inches; springs, semi-elliptic, both front and rear, clipped for rebound; tread, 56 inches; wheels, special artillery fire department type, 40 inches over all, front and rear; tires, 40x6 inches both front and rear; quick demountable type; drive, chain direct to rear wheels; driver's seat, to carry two men, leather upholstery; body, built of heavy steel, well ironed; slat bottom with ½-inch space between slats; tool box, attached to the rear of the frame below body; to be as large as space will permit, with door, fitted with polished brass catch, opening onto rear foot-board; standards, two on rear of body with oil torches; railings, hand rails at rear and side of body; steps, full length side steps, wide step in rear; all steps covered with best grade cor-

rugated rubber matting and bound with metal nosing; fenders, protecting entire car from mud.

**White.** The White Co., Cleveland, O.

Combination chemical and hose wagon of new design. Six cylinder 60 horsepower motor. The chemical tanks are mounted in the customary places—the larger capacity tank which remains on the truck being permanently fitted into its place in back of the driving seat. This tank employs a compressed air system of high pressure and does not depend upon the usual elements for the creation of pressure. Connected to the tank and with a pressure regulating or reducing valve, is a steel air tank on the running board with a gage where its pressure can be readily noted. The air is admitted to the large chemical tank under such pressure as conditions demand and, unlike the other systems, the firemen may increase the air supply as the chemical becomes exhausted, and thus have a stream as powerful at the end as it was in the beginning. Hose, lanterns and other paraphernalia are carried in the regulation manner, but the hooks, ladders, small chemical tanks are located on the truck in such places where they may be instantly reached. Nozzles, for example, are carried on posts built on the rear step. The truck engine is fitted with the White electrical system of starting and lighting, which is an important feature of any vehicle engaged in the emergency work of a municipality. A single switch on the dash, within easy reach of the driver, operates a motor-generator that in-

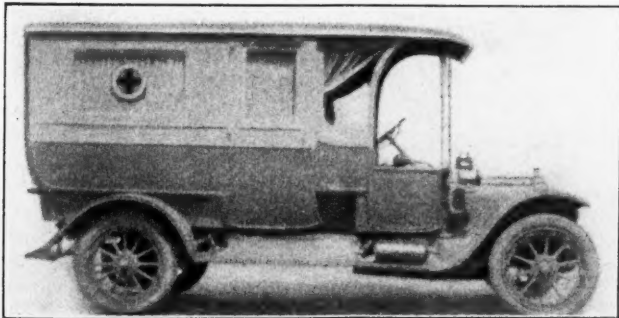


WHITE 5-TON DUMPING TRUCK.

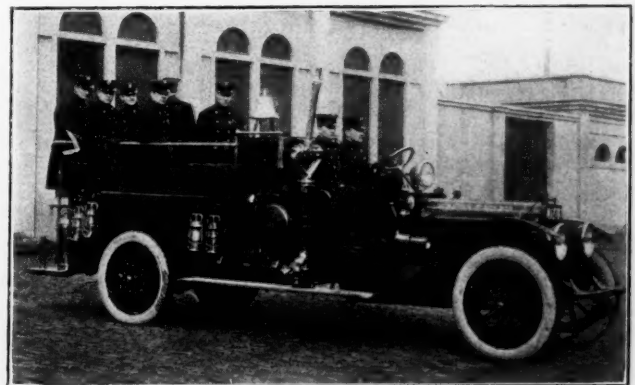
stantly starts the engine. The body was made by Jas. Boyd & Bro., Philadelphia.

An ambulance, made for a Brooklyn hospital, built on 1,500-pound commercial chassis. Has 30 horsepower motor. The car is handsome in appearance and has a very complete equipment, including even a lavatory.

A 5-ton power dumping truck. The dumping mechanism is placed, out of the way, horizontally along the frame of the truck, completely protected by a housing. The power is supplied from the transmission and the dumping mechanism is entirely controlled by a hand lever, a power dump screw operated by a chain from a power transmission. This power transmission is made by extending the main shaft of the transmission; on this extended main shaft which terminates in a universal joint connecting it with the drive-shaft, is placed a loose running sprocket wheel for driving the chain running to the dump screw. The main shaft may revolve without turning the sprocket or universal. Between the sprocket and universal is a positive steel clutch which revolves with the main shaft and can be shifted back and forth upon it. Thus, by operating the positive steel clutch can be thrown into mesh with the universal joint and so drive the truck, or it can be shifted forward to engage the sprocket and release the universal; when the universal is released and the sprocket engaged, the power is transmitted to the dumping mechanism. After the positive clutch is enmeshed with the sprocket driving the dump screw, the action of the dumping mechanism is



WHITE AMBULANCE.



WHITE COMBINATION CHEMICAL AND HOSE.

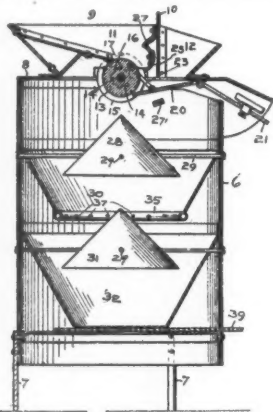
then controlled by the regular clutch and the change-gear lever, which in the regular way are used for running the truck. The power transmission is entirely enclosed in the transmission case, which is divided into two compartments; the forward compartment contains the regular transmission gears—the rear compartment contains the sprocket clutch and universal.

The following is a description of the chassis: Wheel base, 145 inches; gauge—front wheels, center to center of tires, 64 inches; rear wheels, center to center of inside tires, 64 inches; length over all, 17 feet 6 inches; width over all, 7 feet 1 inch; dash to rear of frame, 13 feet 5 inches; rear of seat to rear of frame, 9 feet 8 inches; extreme width of frame, 42 inches; height of top of frame from ground in rear, 37 inches. The body dimensions are: Length inside, 11 feet 2 inches; width inside, 6 feet; height of sides—for sand, gravel and crushed stone, 18 inches; for asphaltum, 21 inches; for loose earth, 24 inches; for coal, 30 inches; driver's seat—width, 47 inches; depth, 19 inches; seat to dash, 25 inches; capacity of gasoline tank, 19 gallons.

## PATENT CLAIMS

1,046,437. FEED-REGULATOR FOR CONCRETE MACHINES. Palace Butler, Indianapolis, Ind., assignor of one-half to Guy R. Elliott, Indianapolis, Ind. Serial No. 686,590.

A proportionate feed for a mixing device consisting of two hoppers, one of which is



provided with a movable discharger, a balanced receiving pan below the discharge opening of both said hoppers, and means connecting with said movable discharger and pan by which both are simultaneously operated.

1,040,544. SHEET-METAL CASING FOR CULVERTS, CONDUITS AND DRAINAGE-TILING. Andrew Smith, San Mateo, Cal., assignor to Smith Metal Perforating Com-

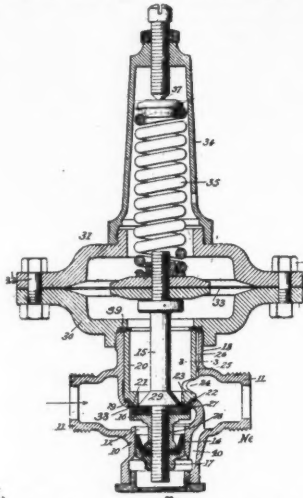


pany, San Mateo, Cal. Serial No. 690,520. A sheet metal casing for culverts, conduits, and the like, comprising corrugated sections and an inner, smooth-walled metal lining.

1,050,036. FLUID-PRESSURE REDUCER OR REGULATOR. Henry Mueller, deceased, Decatur, Ill., by Ora B. Mueller and Adolph Mueller, Decatur, Ill., executors, and Philip Mueller, Decatur, Ill., assignors to H. Mueller Mfg. Co., Decatur, Ill., a Corporation of Illinois. Serial No. 618,490.

A fluid pressure regulator and reducer comprising a casing interiorly divided by a partition into an inlet chamber and an outlet

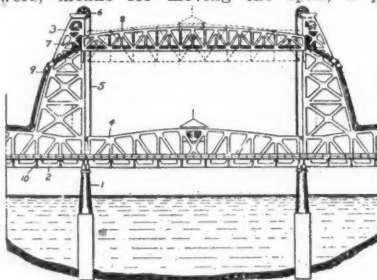
chamber, a cylindrical neck projecting from the outer chamber, said partition having an opening therethrough connecting the chambers, a removable hollow bushing in the outlet chamber and the neck having an exit port in its side, said bushing extending at one end into said opening, a valve seat on said end of the bushing smaller than the opening, a balanced valve adapted to be inserted in the



inlet chamber from the outlet chamber through said opening in the partition and to bear on the valve seat of the bushing, a cylinder in the casing concentric with the neck and opening at one end directly into the inlet chamber and at the opposite end by a by-pass into the outlet chamber, a piston on the lower end of the balanced valve movable in said cylinder, and yielding means automatically controlled by the pressure in the outlet chamber for opening and closing the valve.

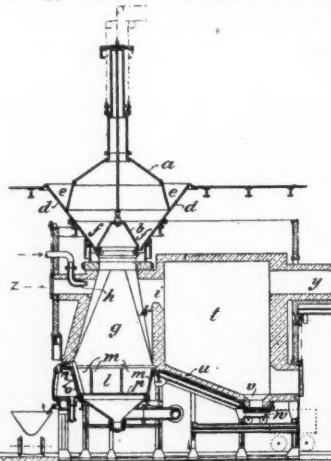
1,049,422. LIFT-BRIDGE. John A. L. Waddell and John Lyle Harrington, Kansas City, Mo. Serial No. 661,282.

The combination with towers, of a span adapted for vertical movement between the towers, means for moving the span, a per-



manent span mounted on the towers above the lower position of the movable span and at one side of the vertical path thereof, and a fluid conduit carried by said span.

1,049,947. APPARATUS FOR DESTROYING REFUSE. Otto Uhde, Hamburg, Germany. Original application filed July 27, 1911. Serial No. 640,871. Serial No. 703,870. In an apparatus of the character described

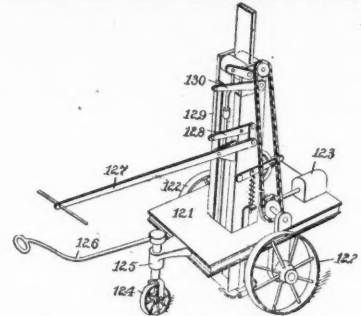


the combination of a furnace, means to grade the refuse as to the size of its particles and to feed said refuse into said furnace, a grate in said furnace to receive said refuse at the

lower part of said furnace, an air blast directed upwardly through said grate, a cross air blast at the upper part of said furnace, a consuming chamber connected with the furnace by an inlet opposite to said cross air blast, an inclined, imperforate floor in said consuming chamber and a smoke flue in the upper part of said consuming chamber.

1,050,003. ROAD-CUTTER OR THE LIKE.

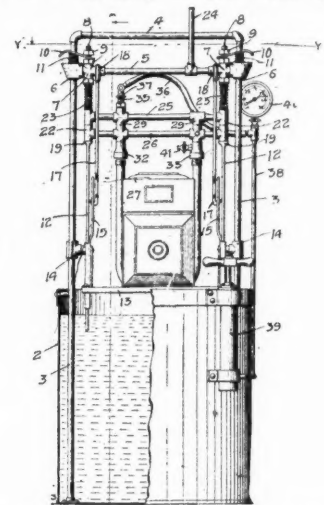
Lee D. Craig, San Francisco, Cal., assignor to National Trenching Machine Company, Washington, D. C., a Corporation of Delaware. Original application filed Dec. 14, 1909, Serial No. 533,063. Serial No. 561,005. Renewed June 12, 1912. Serial No. 703,327.



A road cutting machine having a portable carriage, steering means thereon, a vertically operating cutter mounted thereon, with means for operating the same, and controlling means for the cutter extending to a point for manipulation by the operator on the ground, substantially as described.

1,049,541. METER-TESTING APPARATUS.

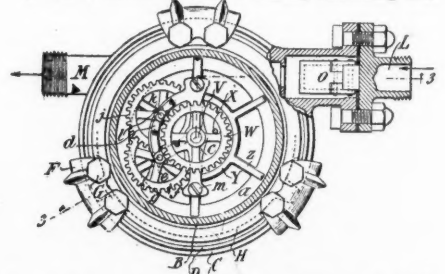
Fredrick C. Shepard and John Thomas Lucas, Minneapolis, Minn. Serial No. 676,957. The combination, with a tank having an open top and adapted to contain a supply of water, of a vertically movable meter carrier,



guides therefor, fluid pressure connections for attachment to the meter, the downward movement of said carrier submerging the meter in the water in said tank and means for locking said carrier in its submerged position.

1,049,329. WATER-METER. Fred Bangarter, New York, N. Y., assignor to The Standard Water Meter Company, Brooklyn, N. Y., a Corporation of New York. Serial No. 506,966.

A water meter having a casing inclosing the



water chamber and formed in two parts with meeting flanges and clamps each of which passes integrally around the outside of the two flanges and holds them together against the internal water pressure, said clamps being weaker than the parts of the casing so as to yield before the casing yields in case of freezing.



## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Birmingham. Small sizes of pipe are in good demand, and the aggregate of orders is excellent. Some of the idle capacity will resume operations. The prospect has improved. Quotations: 4-inch, \$24.50; 6-inch, \$22.50. New York. More life is observed in the market, but buyers are proceeding cautiously, apparently being in no haste to close. Quotations: 6-inch, carloads, \$25 to \$27.

**Lead.**—The tone of the market is a little easier. Quotations: New York, 4.35c.; St. Louis, 4.20c.

**Safe Explosive.**—The International Praeposit Company, 45 West 43d street, New York, N. Y., issues an advance booklet introducing the new explosive, "Praeposit." The manufacturers claim a number of unique qualities for this explosive in regard to its strength, its safety in handling and its stability or keeping qualities. It is declared that it is carried on European express and passenger trains at the same rate and subject to the same regulation as other commodities. It is further claimed that it cannot be exploded by impact, jar, concussion or mechanical interference, that it will not freeze, that it does not deteriorate under the hottest rays of the sun, and that its fumes will not cause headache or nausea. The advantages claimed for the explosive in quarrying dimension stone, besides the above, are that it is slow-burning and will not shatter the stone.

**Venezuelan Asphalt.**—Consul T. W. Voelter, La Guayra, Venezuela, reports that asphalt deposits are found near the lake of Maracaibo and also in the eastern part of the country near the San Juan river, a short distance from the port of Cano Colorado. This last deposit is exploited by an American corporation and the product is shipped to the United States. A concession has been granted to another American corporation to make explorations for petroleum and asphalt over a large part of Venezuela. Engineers and geologists for this corporation are now in the field.

**Dual Automobile Wheels.**—An automobile passenger car, built by the Mack company, equipped with Dow dual wheels, was used in carrying passengers between the two exhibition buildings of the recent Automobile Show in New York City. The Dow dual wheels are used in the place of the more ordinary single or dual wheel. In the Dow equipment a rear set of wheels and axles is situated 18 inches behind the forward pair of rear wheels. All four of the rear wheels are chain driven. It is said that much road shock and tire wear are saved by this construction.

**Asphalt Products.**—The Asphaltum Products Company, Georgetown, Wash., is preparing to enlarge its plant.

**New Carburetor.**—One hundred per cent. more efficiency than that given by the average run of carburetors is the claim which the Motsinger Device Manufacturing Company, of Lafayette, Ind., makes for its new invention. In other words, if, say, one hundred machines are able to average thirteen miles a gallon with their present carburetion, the Motsinger company will guarantee, with its equipment, to raise this average to twenty-six. In individual cases the increase in efficiency will never be less than 65 per cent., say officials of the company, while it may be as high as 135. The general average, however, will be 100. If the Motsinger people are correct in their estimate this means that the auto gasoline consumption of the United States will soon be cut in half. The saving which this will effect, in view of the constantly increasing price of fuel, is almost incomprehensible. That they are correct in their conclusions the officials of the Motsinger company are willing to wager \$1,000 with any one or any individual tryout. The Motsingers, moreover, offer \$1,000 to any one who will show that their device is not absolutely original, in other words, that it involves any principle or mechanical action ever before employed in a carburetor or similar mixing device. They claim a basic patent on their invention, which is the first, they state, scientifically and unfailingly to introduce a perfectly proportioned quantity of gasoline into each cubic foot of air which passes through the carburetor in a practical manner. But three scientific carburetors have ever been built, they contend. Two of these are impractical; the third is the Motsinger, they say.

**Gas Arcs.**—The American Graetzin Light Company, a branch of the Ehrlich & Graetz Company, Berlin, Germany, is reported to be negotiating for a factory at Bridgeport, Conn., where it proposes to manufacture its lamps for the American trade.

**Metal Hose.**—The cost of metal hose to the consumer has decreased in a material way in recent years. Previous to its manufacture in the United States it was imported in moderate quantities, but the price was so high as to be almost prohibitive, in spite of the fact that its suitability for carrying oil and steam was most pronounced, especially on account of a long life as compared with rubber. Therefore the effort of the manufacturers has been to bring the price down to a point where a general adoption of the hose would be possible, and this has been accomplished. A material reduction, effective January 1, was made by the American Metal Hose Company, Waterbury, Conn. Prior to three years ago the only hose of this description manufactured in America was that used in connection with automobile horns and speedometers. To-day this company is oper-

ating a large factory where, in addition to the line of small tubing, there is manufactured flexible metal hose suitable for practically all the purposes for which rubber hose is used. The growth of this business in the year has been large, and 1913 is expected to be very much larger because of the radical decrease in prices.

**Partnership Dissolved.**—The firm of Wilhelmi & Smith, Cleveland, O., has been dissolved. G. C. Wilhelmi will continue business, 810 Columbia Building, as a contractor for water works and sewer systems and general construction.

**Gasoline Tractors.**—A large plant for the manufacture of gasoline traction engines will be established in Cleveland or vicinity by the Wallace Tractor Company, which is owned by the same interests as the J. I. Case Plow Company, Racine, Wis. The officers of the two companies are identical. The new company has commenced the manufacture of its products in the plant formerly occupied by the Royal Motor Car Company on East 72d street, Cleveland, and may eventually secure this plant as its permanent site if the adjustment of financial affairs of the Royal Company makes possible the transfer of the property. The local manager of the Wallace Tractor Company is F. G. Street, 1308 Williamson Building, Cleveland.

### NEW COMPANIES.

Union Reduction Company, Indianapolis, Ind.; capital, \$300,000; to build and operate a garbage reduction plant. Incorporators: Jas. P. Goodrich, Winchester, Ind.; James T. Moosman and J. McIntosh.

Dunkard Township and Monongahela Electric Company, Pittsburgh, Pa.; \$5,000.

Delafield Electric Light Company, Aspinwall, Pa.; \$5,000.

Guyosuta Electric Light Company, Sharpsburg, Pa.; \$5,000.

Montana Power Company, Trenton, N. J.; capital, \$100,000,000. Consolidation of Butte Electric and Power Company, Montana Power Company, Madison River Power Company, Billings and Eastern Montana Power Company and the Missouri River Electric and Power Company. These companies had a combined capital of \$14,000,000.

Edison Electric Company, Lancaster, Pa. Consolidation of companies operating in Elizabethtown, Marietta, Martic, Conroy, Eden, Conestoga, Providence, Euphrata, Earl, West Earl, Upper Leacock, Strasburg and Pequea.

Pequannock Electric Company, Paterson, N. J.; capital, \$125,000; to supply light and power. Incorporators: Roscoe W. Smith, Elwood C. Smith and Edgar A. De Voe.

Handt Tractor Company, Waterloo, Ia.; capital, \$350,000. Incorporators: L. E. McLean and E. M. Hussey, Augusta, Me.; E. M. Leavitt, Winthrop, Me.; John T. Handt, Waterloo.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREETS AND ROADS</b>				
N. Y.	Ilion	Feb.	1..Brick or bituminous paving, 25,000 yds.	J. D. Ringwood, Engr.
Ill.	Rockford	About Feb.	1..20,000 sq. yds. block paving	W. Bennett, Mayor.
Mich.	Bay City	Noon, Feb.	1..Portland Cement, crushed stone, gravel, &c.	O. A. Marsac, Sec. Com.
Ga.	Rome	Feb.	1..Paving East Second ave.	City Clerk.
Ohio	Washington	Noon, Feb.	1..Brick on Rawling st.	C. E. Mark, Dir.
Ohio	Sullivan	Noon, Feb.	1..Gravel or stone, 2½ miles	M. Frank, Co. Clerk.
Ohio	Wapakoneta	10 a.m., Feb.	1..Pike in Wayne Township.	A. E. Schaffer, Co. Aud.
Mo.	Kirksville	5 p.m., Feb.	3..Paving one street and two alleys	A. D. Risdon, C. Clk.
Ind.	Valparaiso	1 p.m., Feb.	3..Two roads, 3¾ miles, cost \$22,000	C. A. Bachly, Co. Aud.
La.	Lacona	Feb.	3..Road work for year.	C. E. West, Clk, Trustees.
Ind.	Rushville	2 p.m., Feb.	3..Macadam roads	A. R. Holden, Co. Aud.
Ind.	Kentland	1 p.m., Feb.	3..Macadam roads	S. R. Sizelove, Aud.
Ohio	Burton	Noon, Feb.	3..Concrete pavement	C. Brown, Vil. Clerk
Mich.	Detroit	Feb.	3..Oil for flux, 700 tons; 3,000 tons refined asphalt.	J. J. Haarer, Comr.
Tex.	Galveston	11 a.m., Feb.	3..Concrete gutter, 292 ft.	J. M. Murch, Co. Aud.
Fla.	St. Augustine	7.30 p.m., Feb.	5..Paving Saragossa st.	J. M. G. Carrera, City Clerk.
Ind.	Cannelton	Feb.	3..Constrn. 18.2 miles of rock roads	County Comrs.
Ind.	Greencastle	11 a.m., Feb.	3..Four macadam roads, 3¼ miles	C. L. Airhart, Co. Aud.
Ohio	Ravenna	Noon, Feb.	3..Draining, curbing and paving several sts.	W. H. Linton, Dir.
Minn.	Minneapolis	11 a.m., Feb.	3..Gravel road, 4,000 lin. ft.	A. P. Erickson, Co. Aud.
La.	Audubon	1 p.m., Feb.	3..Road work for year in Viola Township	r. Sampson, R. F. D. No. 2.
Ind.	Newport	10 a.m., Feb.	3..Macadam in Helt and Eugene Townships	I. Cossey, Comr.
Ind.	Jeffersonville	11 a.m., Feb.	3..Crushed rock or macadam road	E. W. Stoner, Co. Aud.
Miss.	Aberdeen	2 p.m., Feb.	3..22 miles road, includes 2,100 ft. 18 to 48-in. drain pipe	Supervisors, Dist. No. 1.
Ind.	Rising Sun	1 p.m., Feb.	3..Free pike	J. P. Hemphill, Co. Aud.
Mont.	Hamilton	5 p.m., Feb.	3..Sidewalks and curbs, Dist. No. 2	G. A. Reese, City Clerk.
Ind.	Marion	2 p.m., Feb.	4..Gravel or macadam	E. H. Kimball, Co. Aud.
Ind.	Bloomington	2 p.m., Feb.	4..Pike in Richland Township	W. F. Kinser, Co. Aud.
Ind.	Madison	2 p.m., Feb.	4..Paving	A. M. Taff, Co. Aud.
Fla.	Sarasota	Feb.	4..Tile and monolithic concrete sidewalks	J. W. Phillip, City Engr.
Wash.	Vanc. Barracks	11 a.m., Feb.	4..Walks, curbs, gutters	Constrn. Q. M.
Ind.	Vincennes	2 p.m., Feb.	4..Six miles gravel, 4 jobs	J. T. Scott, Co. Aud.
Ind.	Winnemac	Noon, Feb.	4..Gravel road	W. E. Munchenburg, Co. Aud.
Ind.	Paoli	2 p.m., Feb.	4..Gravel road	E. A. Palmer, Co. Aud.
Ind.	Crawfordsville	10 a.m., Feb.	4..Gravel road	D. B. Engle, Co. Aud.
Ind.	Beech Grove	5 p.m., Feb.	4..Imp. two avenues	H. M. Johnson, Ch. Town Bd.
Ind.	Cannelton	Noon, Feb.	4..Macadam, 18 miles, cost \$69,000	C. D. Patrick, Aud.
Ohio	Akron	Noon, Feb.	4..Paving 5 streets and constrn. sewers	R. M. Pillmore, Dir. Bd. Com.
Ill.	Oak Park	4 p.m., Feb.	4..Asphaltic concrete, concrete curb and gutter	B. C. Brandstadt, Secy. B.L.L.
Ohio	Youngstown	Noon, Feb.	5..Paving 2 streets	W. H. McMillin, Clerk.
N. Y.	New York	2 p.m., Feb.	5..Repairing sheet asphalt, 66,000 sq. yds.	Geo. McAneny, Boro. Pres.
Fla.	Live Oak	4 p.m., Feb.	5..Brick, granitoid, sheet asphalt, asphaltic conc. 25,000 yds.	C. A. Hardee, Sec.
Miss.	West Point	2 p.m., Feb.	5..17 miles gravel or sand clay roads, bridges, drains, &c.	Comrs., Dist. No. 2.
Miss.	West Point	2 p.m., Feb.	5..9 miles gravel or sand clay road, bridges, drainage, &c.	Comrs., Dist. No. 3.
Ind.	Crown Point	Noon, Feb.	5..Four gravel roads	C. A. Johnson, Co. Aud.
Ind.	Peru	Noon, Feb.	5..Culverts, bridges and gravel road	F. K. McElheny, Co. Aud.
S. D.	Plankinton	6 p.m., Feb.	5..Highways, 65 miles	Co. Aud.; Dakota Engr. Co., Mitchell S. D.
Ohio	Cleveland	Noon, Feb.	5..Paving five streets	Board of Control.
Ohio	Cleveland	Noon, Feb.	5..Paving number of streets	W. J. Springborn, Dir.
Ind.	Corydon	Feb.	6..Six gravel roads	J. L. O'Bannon, Co. Aud.
Wash.	Chehalis	Feb.	6..Concrete road, cost \$16,000	Co. Comrs.
Pa.	Turtle Creek	Feb.	6..Vitriified blocks, 32,000 yds.; brick, 17,000 yds.; slag, 13,000 yds.; concrete curbs, 22,000 ft.	Boro. Council; Harrop, Hopkins & Taylor, Pittsburgh.
Mich.	Manistique	2 p.m., Feb.	6..2¾ miles road	County Clerk.
Ohio	Shaker Heights	Noon, Feb.	10..Imp. and paving	C. A. Palmer, Vil. Clerk.
Fla.	Jacksonville	3 p.m., Feb.	10..Pavement on concrete, 98,800 yds. (See proposal add this issue.)	H. Gaillard, Chrmn.
La.	Clinton	8 p.m., Feb.	11..Concrete, asphalt, brick or Dolarway, 19,600 sq. yds.	J. G. Thorn, City Engr.
Mich.	Saginaw	2 p.m., Feb.	11..Furn. highway material	J. W. Ederer, Comr.
Ohio	Bellevue	Noon, Feb.	11..Brick or bituminated concrete	Dir. Pub. Ser.
Ky.	Louisville	Feb.	11..Asphalt, brick, wood block and cement sidewalks, cost \$263,000	Bd. of Pub. Works.
Ind.	Martinsville	Noon, Feb.	13..Gravel roads	J. S. Whittaker, Co. Aud.
Ind.	Indianapolis	10 a.m., Feb.	14..Embankment on boulevard	Henry Jameson, Ch. Pk. Comrs.
Ohio	New Concord	Feb.	14..Furn. 5,280 yds. brick pavement, also constrn.	W. G. McKinney, Vil. Clerk.
Pa.	Llanerch	8 p.m., Feb.	15..Crushed stone	H. B. Morse, Sec. Bd. Comrs.
Ala.	Wetumpka	Noon, Feb.	17..Gravelling 1 mile, draining 4 miles road.	Co. Comrs.
Md.	Baltimore	Feb.	19..Paving, 8 contracts, cost \$230,000	Board of Awards.
Ind.	Logansport	Apr.	9..Macadam roads	J. E. Wallace, Co. Aud.
<b>SEWERAGE</b>				
Ind.	South Bend	Feb.	1..2¾ miles trunk sewers, &c.	A. P. Pearley, Clerk.
Ohio	Ashland	Feb.	1..Brick sewer, or segment block, 3,000 ft. 36-in.	F. Edwards, Dir. P. S.
Ohio	Burton	Noon, Feb.	3..Clay pipe, 1,500 ft. 12 to 15-in., &c.	A. C. Brown, Vil. Clk.
Ohio	Akron	Feb.	4..Sewers in seven streets	Board of Control.
Minn.	St. Paul	5 p.m., Feb.	4..Repairing sand tunnel	Oscar Claussen, Comr. Pb. Wks.
N. Y.	Newburg	5 p.m., Feb.	4..Vit. pipe, 2,011 ft. 30-in., 850 ft. 20-in.	D. J. Coutant, City Clerk.
N. J.	Newark	Feb.	4..Sec. No. 7 Passaic Valley sewer	Passaic Val. Sewerage Com.
Ohio	Troy	Noon, Feb.	4..Sanitary sewer, 6 miles	G. B. Hatfield, Dir.
Ohio	New Berlin	Noon, Feb.	4..Sanitary sewers, 12,800 ft. 8 to 15-in. clay pipe and disposal plant	E. L. Garmon, Mayor.
N. Y.	Brooklyn	11 a.m., Feb.	5..Sewer basins	A. E. Steers, Boro. Pres.
N. J.	Princeton	3 p.m., Feb.	5..Outfall sewer and purification plant	G. C. Wintringer, Sec.
Ohio	Youngstown	Noon, Feb.	5..Sewers in 4 streets	W. H. McMillin.
N. Y.	Niagara Falls	Feb.	7..Sewer, cost \$1,550	Bd. of Pub. Works.
Minn.	Shakopee	8 p.m., Feb.	7..Sewer outlet, 1,500 ft. 10-in. pipe	J. T. McMahon, Mayor.
N. J.	Spring Lake	8 p.m., Feb.	10..Sewer outlet	E. V. Patterson, Boro. Clerk.
Ohio	Shaker Heights	Noon, Feb.	10..Sewers	C. A. Palmer, Village Clerk.
Mo.	Maplewood	Feb.	11..Sewer in Manchester avenue	City Clerk.



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ill., Berwyn	8 p.m., Feb.	11..	Brick sewer and laterals, cost \$92,444.	W. V. Aikman, Sec.
Mass., New Bedford	8 p.m., Feb.	12..	Sluice gates, lifting machinery and motors	W. F. Williams, Consult. Engr.
Wis., Ripon	Mar.	1..	Sewers	City Clerk.
Mich., Ann Arbor	Mar.	1..	One mile 8-in., two miles 12 to 20-in. vit. pipe	Manley Osgood, City Engr.
Ind., South Bend	Mar.	11..	Bowman Creek sewer	Board of Pub. Works.
WATER SUPPLY				
Tex., Malone	Feb.	1..	Power house, tower and reservoir, 50,000 gals.	H. C. Rogers, McCall Moore Engrng. Co.
Kan., Frontenac	7.30 p.m., Feb.	2..	Water main	City Clerk.
N. Y., New York	2 p.m., Feb.	3..	C-i. pipe and specials, valves, hydrants	H. S. Thompson, Comr.
Ohio, Rockport	Noon, Feb.	3..	Water mains	Fred Feuchter, Clk. Bd. Affrs.
Mo., Farmington	6 p.m., Feb.	3..	Deep well	W. H. Evers, Engr. Co., Cleve.
Ont., Port Arthur	Feb.	3..	46,000 ft. 24-in. steel pipe, 6,000 ft. 12-in.	S. L. Asbury, City Clerk.
Cal., San Diego	Feb.	3..	Cast iron pipe, 4,733 tons	J. J. Hackney, Comr.
Wis., Hudson	8 p.m., Feb.	3..	Furn. 10,000 ft. 1½-in. pipe	City Clk.
N. J., Ramsey	Feb.	4..	Cast iron pipe, 950 tons; 100 hydrants; 100 valves, well, pump and reservoir	A. Carras, C. Clk.
Ohio, New Berlin	Noon, Feb.	4..	Mains, 11,250 ft. 4 to 8-in., steel tank, motor pump, &c.	H. R. Parvin, Boro. Clk.
Pa., Munnhall	8 p.m., Feb.	4..	Laying 6-in. c-i. water line, hydrants, 2 gate-valves and 1 regulator	E. L. Garmon, Mayor.
Mass., Boston	Noon, Feb.	4..	50 tons No. 1 casting, 63 tons No. 2	H. I. MacLay, Sec.
Neb., Grand Island	8 p.m., Feb.	5..	One 10, two 12-in. wells, 100 ft. deep	J. E. Mullen, Supt. Sup.
N. Y., Ft. Niagara	11 a.m., Feb.	5..	Steel water tank, 60,000 gals	J. H. Miller, Comr.
Ont., Parkhill	Feb.	6..	Hydrants, valves, deep well, pump, engine, pipe-laying	Lt. E. S. Miller.
Minn., Shakopee	Feb.	7..	Water mains, 760 ft. 8-in., hydrants, valves, &c.	Bowman & O'Connor, Engrs., Berlin.
Ohio, Shaker Heights	Noon, Feb.	10..	Water mains	J. T. McMahon, Mayor.
B. C., Victoria	4 p.m., Feb.	10..	Steel pipe, 10,000 ft. 6-in., 3,000 ft. 8-in.	C. A. Palmer, Vil. Clerk.
N. Y., New York	11 a.m., Feb.	11..	Hydraulic cylinders, valves, piping, &c. for city tunnel	City Purch. Agt., Galt.
Ill., Decatur	10 a.m., Feb.	11..	Filter plant	Chas. Strauss, Pres.
Miss., Yazoo City	3 p.m., Feb.	15..	Water meters	A. Leach, City Clerk; W. G. Clark, Engr., Toledo, O.
N. Y., New York	11 a.m., Feb.	18..	Bronze shaft caps and appurtenances for city tunnel	J. S. Butler, Supt. Bd. of Water Supply.
Mass., Boston	Noon, Feb.	19..	High pressure valves, 932, 6 to 16-in.	J. E. Mullen, Supt. Supplies.
La., Baton Rouge	Noon, Feb.	20..	Reinforced concrete reservoir, 1,000,000 gals. capacity	J. H. Wood, Sec. Water Co.
O., Willoughby	Feb.	22..	Mechanical water purification plant, 1,000,000 gals. capac.	P. P. Saxton, Clerk Board.
Minn., Gibbon	Mar.	3..	Extending water mains	C. W. Carlson, Vil. Clerk.
Minn., Gibbon	7 p.m., Mar.	3..	Water main	C. W. Carlson, Vil. Clk.
Hayti, Port au Prince	Apr.	3..	Water works, cost \$400,000	Dept. Travaux Publiques.
LIGHTING AND POWER				
Wis., Kilbourne	Feb.	1..	Equipment for municipal electric light plant	D. G. Howey, Supt.
Ky., Munfordville	Feb.	1..	Electric light plant, 25 h.-p. oil engine	P. K. Hubbard, Pres.
Ohio, Cleveland	Noon, Feb.	3..	Surface condensers, switchboard appar. & oil switches	W. J. Springborn, Dir. P. S.
Kansas, Kingman	Feb.	3..	Electric light plant. Cost, \$25,000	Worley & Black, Engrs.
Ohio, New P. rlin	Noon, Feb.	4..	Motor for triplex pump	E. L. Garmon, Mayor.
D. C., Washington	Feb.	4..	Motor and blower, 7 motors	Navy Dept.
Cal., Redlands	Feb.	5..	Electric power plant, 600 h.-p., steam, gasoline or oil	R. W. Thomas, City Clerk.
Ind., South Bend	10 a.m., Feb.	5..	Two 300 h.-p. water tube boilers	O. C. Bastian, Pres.
N. J., Princeton	3 p.m., Feb.	5..	Settling tanks, sprinkling and sand filter beds	Trus. Princeton University.
N. Y., New York	2.30 p.m., Feb.	5..	Inspection and maintenance of electric apparatus	M. J. Drummond, Comr.
Fla., St. Petersburg	Feb.	6..	Purchas. gas franchise	W. F. Divine, City Clerk.
New Zea., Wellington	Feb.	6..	Weir feed pump, wrought steel piping, c-i. fittings, &c.	Town Clerk.
D. C., Washington	Feb.	8..	Direct current switchboard and wiring, cost \$11,500, at Newport	10131 Bur. of Mfgs., Wash. D.C.
Sask., Moose Jaw	Noon, Feb.	10..	Steam turbine and generator, 1,500 kw.	Navy Dept.
N. D., Devils Lake	Feb.	10..	Ornamental street lighting system	A. W. Mayberry, Ch. Comrs.
La., New Orleans	Noon, Feb.	18..	Transmission line and power cables for drainage system	P. J. McGlory, Mayor.
Kan., Canton	Feb.	20..	Electric light plant, cost \$10,000	F. S. Shields, Sec.
N. H., Portsmouth	11 a.m., Feb.	21..	Locomotive crane, 15 tons	T. N. Frantz, C. Clk.; The Alamo Eng. Sup. Co., Omaha, Neb.
Chile, Santiago	Sept.	10..	Illuminating plant for port works	Navy Dept. Comision de Puertos.
FIRE EQUIPMENT				
Kans., Chanute	Noon, Feb.	1..	Five hundred feet 2½-in. fire hose	G. T. Amyx, C. Clk.
Minn., New Duluth	8 p.m., Feb.	3..	Fire hall	C. S. Palmer, City Clerk.
Cal., Ontario	Feb.	3..	Fire-alarm system	R. O. Brackenridge, City Clk.
Wis., Fau Claire	Noon, Feb.	4..	Fire Chief's car	J. C. Fennessey, City Clerk.
Ind., Fort Wayne	5 p.m., Feb.	4..	Non-interfering successive fire alarm boxes, 5 or more	C. J. Hutzell, Chrmn. Bd.
Ohio, Cleveland	Noon, Feb.	4..	Apparatus	C. W. Stage, Director.
N. Y., Utica	Feb.	4..	Auto combination chemical and hose	Bd. Contract & Supply.
Ohio, Canton	Noon, Feb.	10..	Reconstrn. chemical wagon into auto.	G. F. Koehler, Dir. P. S.
Wyo., Sheridan	Feb.	10..	Motor comb. chemical & hose wagon	E. J. Winthorpe.
Ohio, Niles	Noon, Feb.	10..	Fire department building	E. Tregaskis, Clerk.
N. Y., Niagara Falls	Feb.	18..	Fire hose, 1,500 ft., 4 miles copper wire	City Clerk.
BRIDGES				
Cal., Yosemite	2 p.m., Feb.	1..	Four reinforced concrete bridges	L. C. Laylin, Asst. Sec. of Int. Dir. Pub. Ser.
Ohio, Dayton	Feb.	1..	Bridge at Keowee st.	F. K. McElheny, Co. Aud.
Ohio, Troy	Feb.	5..	Repairing and building bridges	Town Board.
N. Y., Ilion	Feb.	8..	Two concrete bridges	F. H. Sayles, Town Clerk.
N. Y., German Flatts	1 p.m., Feb.	8..	Two bridges	E. F. Vrzak, Co. Clerk.
Neb., Schuyler	Noon, Feb.	10..	Bridges during year	J. C. Armstrong, Boro. Clerk.
Pa., Etna	5 p.m., Feb.	10..	Plate girder bridges, concrete abutments	F. W. Ward, Boro. Engr.
Pa., Ridgeway	Feb.	10..	Concrete arch bridge	J. R. Cowell, Dir. P. S.
Ohio, Toledo	Noon, Feb.	17..	Sumner st. bridge	County Comrs.
S. D., Woonsocket	Feb.	18..	Bridges during year	County Comrs.
S. D., Salem	Feb.	18..	Bridges during year	County Comrs.
MISCELLANEOUS				
Ill., Chicago	11 a.m., Feb.	1..	Diamond drilling machine and eight carbons	L. E. McGann, Cmr. Pb. Wks.
N. J., Millburn	8 p.m., Feb.	3..	Collecting and removing ashes and garbage, 2 years	E. L. Smithers, Chrmn. Com.
D. C., Washington	2 p.m., Feb.	3..	Playground equipment	C. H. Rudolph, Comr.
N. J., Irvington	8 p.m., Feb.	3..	Combination patrol and ambulance automobile	Chas. Hartkoff, Ch. Police Com.
N. Y., New York	Feb.	3..	Concrete and stone sea wall at Ellis Island	Wm. Williams, Comr.
Tex., Beaumont	10 a.m., Feb.	4..	Equipment for municipal abattoir	J. G. Sutton, City Sec.
Mich., Detroit	Feb.	4..	Incinerating plant, 100 tons capacity	J. J. Haarer, Comr.
Utah, Logan City	8 p.m., Feb.	4..	Removing garbage	H. G. Hayball, Comr.
Minn., St. Paul	5 p.m., Feb.	4..	Two oil sprinkling wagons with heater and distributor	O. Claussen, Comr. Pub. Wks.
Minn., St. Paul	Feb.	4..	Sougee Street washing machine, 2 sand sprink. wagons	O. Claussen, Comr. Pub. Wks.
Wash., Aberdeen	5 p.m., Feb.	5..	Auto patrol	P. F. Clark, City Clerk.
Ind., Indianapolis	10 a.m., Feb.	14..	Combined transit and levelling instrument	W. T. Patten, Aud.
Mont., Chinook	Feb.	20..	Fireproof court house, cost \$70,000	County Comrs.
ask., Regina	Noon, Feb.	24..	Street railway materials, steel rails, wire line equipment	R. Martin, Mayor.
Mo., Kansas City	Feb.	25..	Incinerator, cost \$92,000	L. R. Ashe, City Engr.

## STREETS AND ROADS

**Birmingham, Ala.**—Orders have been issued by city for construction of grade crossing at Twenty-ninth st. and Twenty-ninth ave. across tracks of Southern Railway.

**Pell City, Ala.**—State Aid Highway Commission has announced that appropriation for pike to be built between here and Easonville had been set aside and work would begin on Feb. 1. Cost of this pike will reach approximately \$10,000.

**Oakland, Cal.**—Following is part of report presented to City Council by Commissioner of Streets William J. Baccus: Adopting plans and specifications for the improvement of Fourteenth st., between Wood st. and 500 ft. westerly and recommending passage of resolution of intention for same. Directing City Engineer to prepare proceedings for improving Butler st. from Broadway to Desmond st. Directing City Engineer to prepare proceedings for improving Laguna ave. from Hopkins to Madeline st.

**San Francisco, Cal.**—Works Board has been advised by City Attorney that for paving of northerly half of Lincoln way from Thirty-sixth to Forty-first aves. new contract must be let after bids have been called for, and that work cannot be done under board's contract with City Street Improvement Co. for paving of Lincoln way from Twentieth to Thirty-sixth ave.

**Thompsonville, Conn.**—Resolution for appropriation of additional \$10,000 for maintenance and repairs on roads and bridges has been passed.

**Georgetown, Del.**—It is rumored that Gen. T. Coleman du Pont, whose plans of building State highway through Delaware are now held up by Supreme Court, will give Sussex County special boulevard from Shelbyville to Ellendale via Millsboro, Dagsboro, Frankford, Georgetown and Ellendale.

**Washington, D. C.**—Extension of Seventeenth, Bryant and Everts sts. northeast are proposed in bill which Senator Martin, of Virginia, has introduced in Senate. Under its terms Seventeenth st. would be extended from Rhode Island ave. to Franklin st., and from southern terminus south of Douglass st. to south line of Bryant st., with width of 100 ft. Bryant st. would be extended from its western terminus east of Seventeenth st. with width of 90 ft. Everts st. would be extended from Queen Chapel road to Eighteenth st. and from Rhode Island ave. to Fifteenth st., with a width of 90 ft.

**Washington, D. C.**—Opening of New York ave., Northeast, as public highway has been petitioned for.

**Arcadia, Fla.**—Committee on Streets has authorized repairs to various streets of town.

**Rome, Ga.**—Engineer has submitted estimate to effect that curb and gutter from East Sixth st., where present paving ends, to city limits, at Dean st., will be \$3,425. He estimates that asphalt macadam pavement somewhat of character laid on Third ave. will cost for same distance sum of \$9,574.

**Rome, Ga.**—Bids will be received on Feb. 1 for paving of East Second st.

**Peoria, Ill.**—Board of Local Improvements has decided to pave South Adams st. from Oak to Cedar with creosoted wood block. Thrush ave. is to be paved with brick from Knoxville to Wisconsin sts., at estimated cost of \$22,947, or \$4.80 per front ft. L. D. Jeffries is City Engr.

**South Bend, Ind.**—Petition for opening of Turnock st. from South Bend ave. to Corby st., has been filed with Board of Public Works and referred to City Engineer.

**Clinton, Ia.**—Resolution has been adopted and bids will shortly be asked for improvement of Second ave. E. M. Howes, Mayor.

**Bay City, Mich.**—Common Council has resolved that it is necessary to construct 20-ft. permanent pavement on Water st. and Harrison st. from Twenty-eighth st. to Cass ave.

**Bay City, Mich.**—Bids will be asked for paving west section of Lafayette ave. bridge with creosote blocks. Estimate by Engineer Blomshield showed that cost will be about double that of planking, in use heretofore, while creosote pavement will last five times as long.

**Bay City, Mich.**—That a concerted effort will be made by Board of Supervisors of many Michigan counties to secure construction of State highway, fol-

lowing main meridian from Ohio State line to Mackinaw, seems certain.

**Lansing, Mich.**—State Senator Allswede, of Bay-Midland district, who is devoting himself to trunk line State road idea and who is preparing bills to this end, has gone more in detail into plan and finds that such large proportion of original trunk line highway route already is improved that he can add another north and south line to original proposal and still remain within \$2,000,000 appropriation. To this plan he has outlined third or coast line road from Detroit through Flint, Saginaw, Bay City, Tawas, Alpena, Cheboygan to Mackinaw. With this road he will have three north and south lines, one on central meridian and another on west shore starting at Niles and following the Lake Michigan coast. The cross-State line is from Detroit to St. Joseph. Proposal calls for total of 1,300 miles, of which 300 already is improved. Allowing \$2,000 per mile and using convict labor, he says work can be kept within \$2,000,000 that represent one-half of automobile tax over period of 3 or 4 years. Other half will continue to go to State reward good roads fund.

**St. Joseph, Mich.**—Board of Supervisors of Berrien County has adopted resolution providing for surplus of fortunes over \$1,000,000 to be spent by county in good roads works.

**Duluth, Minn.**—Committee on streets, alleys and sidewalks has been ordered to cause to be circulated petition for improvement of Grand ave., from Vernon st. to Fifty-fourth ave., West, cost not to exceed \$175 per 50-ft. lot. Estimated costs are \$135,727.35 for creosote block, \$166,297.55 for sandstone, \$126,642.73 for brick and \$86,589.25 for concrete.

**Duluth, Minn.**—City Engineer has submitted two estimates for extending culvert under Second st. at Thirteenth ave. east so that additional grading can be done. First would cost \$4,105.20, following bed of Chester Creek, and ending on private property. Second plan extends culvert to First st. and takes it entirely from private property. Cost would be \$12,551. Engineer states that the first plan would naturally be more advantageous for city.

**Duluth, Minn.**—City Engineer John Wilson has estimated that to open West Superior st. from Eighth to Fourteenth aves. west to full width of 80 ft. on maximum grade of 3 per cent., it will be necessary to remove 173,400 cu. yds. of rock. At \$1.90 per yd. cost would be \$329,460. Adding 10 per cent. for engineering costs the total would run to \$362,406. Engineer says that cost could probably be reduced considerably by sale of broken stone. Council recently approved proposed bill authorizing issuance of \$50,000 of bonds to open Superior st. by cutting through Point of Rocks. Resolution has also been passed asking that legislature authorize cities of over 50,000 population to issue bonds in excess of legal amount to improve their principal streets where they are blocked by ledge or other natural barrier.

**St. Paul, Minn.**—Bids for bonds to provide funds for street work during coming year are being received at office of City Comptroller, and will be opened Feb. 5 by Sinking Fund Committee. Approximately \$6,500 is involved. Improvements for which bonds are being issued are grading, paving and sewer construction.

**St. Paul, Minn.**—Contracts will shortly be let for construction of municipal asphalt paving plant.

**St. Paul, Minn.**—Paving of Snelling ave. from Grand to University ave. is being favorably considered.

**St. Paul, Minn.**—Proposed boulevard from Fort Snelling to Indian Mounds Park is being favorably considered.

**St. Paul, Minn.**—Board of Public Works has voted favorably on widening of Earl st. According to the order, which probably will be presented to Board of Aldermen, streets will be opened on both sides of Earl st. bridge, north and south of tracks. All streets involved will be 40 ft. wide with exception of street from Ross to Seventh on west side of Earl. This street will be 25 ft. wide.

**Collins, Miss.**—Board of Road Commissioners of Beat No. 3 are preparing to expend \$8,000 or \$10,000 graveling roads.

**Chillicothe, Mo.**—City Council has passed ordinance for paving of Cooper st., short street beginning at Walnut and running west to Dickenson st., with Hassam paving. Block between Jackson and Webster sts. on Vine has also been ordered paved with Hassam paving. Vine st., from First to Ninth st.,

probably will be paved in early spring, as number of property owners on street are desirous of having street beautified.

**Trenton, N. J.**—City Commission has voted to lay resolution providing for grading of Riverside Drive, along the property of Riverside Heights Improvement Co., aside for week.

**Atlantic City, N. J.**—The Commissioners have made tour of inspection on Maine ave. and decided to recommend grading of street with gravel between Madison and Caspian aves.

**Bayonne, N. J.**—Petition from property owners along East Twenty-ninth st., between Broadway and Ave. E, asking for improvement of that thoroughfare, has been received and filed.

**Elizabeth, N. J.**—Steps looking toward restoration of Morris ave. under railroad elevations have been taken by Mayor Mravlag.

**Irvington, N. J.**—Ordinances have been passed for improvement of various streets. D. H. Greene is Mayor.

**Jersey City, N. J.**—Improvement of Sip ave., from Bergen to Summit aves., and Summit ave., from Sip to Pavonia aves., has been discussed.

**Newark, N. J.**—Paving of Highland ave. and Tichenor lane has been authorized.

**Orange, N. J.**—Mayor is in favor of repaving Main st.

**Rahway, N. J.**—Petition for permanent pavement of Irving st. from Poplar st. to West Grand st. has been received and referred to Street Committee and City Engineer to ascertain cost.

**Trenton, N. J.**—With a bid of \$101.38 per share, E. H. Rollins & Son, of Boston, have been sold \$51,650 issue of 10-year 4½ per cent. street paving bonds by City Treasurer Harry E. Evans.

**Wildwood, N. J.**—Wildwood Crest Council will shortly award contract for paving Pacific ave.

**Brooklyn, N. Y.**—Plans are being considered for improvement of Remsen ave., Far Rockaway.

**Brooklyn, N. Y.**—Following is list of final authorizations for Brooklyn approved at last meeting of the Board of Estimate, Jan. 23: Grading sidewalk spaces and flagging Lincoln pl. from Troy ave. to Schenectady ave., estimated cost \$800; Regrading and curbing where necessary, Utica ave., from Church ave. to the Long Island Railroad, estimated cost \$8,400; regulating and grading Ave. T. from Coney Island ave. to Ocean Parkway, estimated cost \$4,900; paving with asphalt (permanent pavement) Sutter ave., from Howard ave. to Grafton st., estimated cost \$1,600; regulating and grading Union st. from Utica ave. to Rochester ave., estimated cost \$1,900; paving with asphalt (permanent pavement) Seventy-fifth st., from Fort Hamilton ave. to Tenth ave., estimated cost \$11,100; paving with granite block (permanent pavement) Humboldt st., from Norman ave. to Meserole ave., estimated cost \$8,300; paving with asphalt (permanent pavement) Belmont ave., from Elton st. to Chestnut st., estimated cost \$19,500; paving with asphalt (permanent pavement) Sixteenth ave., from Forty-seventh to Forty-eighth st., estimated cost \$1,700; paving with granite block (permanent pavement) the widened portion of the roadway of Roebbling st., from Division ave. to Broadway, estimated cost \$5,300; paving with asphalt (permanent pavement) the widened portion of the roadway of Taylor st., from Lee ave. to Bedford ave., together with roadway of public place at intersection of Division ave. and Lee ave., estimated cost \$4,400; paving with asphalt (permanent pavement) Seventy-third st., from Twelfth ave. to Fourteenth ave., estimated cost \$9,800; regulating and grading Belmont ave., from Van Sinderen ave. to Snediker ave., and from Alabama ave. to Pennsylvania ave., estimated cost \$3,900; regulating and grading and paving with asphalt (permanent pavement) Bristol st., from a point about 125 ft. south of Blake ave., to Dumont ave., estimated cost \$4,200; regulating and grading and paving with asphalt (preliminary pavement) Ovington ave., from Stewart ave. to Seventh ave., estimated cost \$4,800. Following are preliminary authorizations: Regulating and grading Suydam st., from St. Nicholas ave. to Cypress ave., one block, estimated cost \$2,900; regulating and grading East Second st., from Fort Hamilton ave. to Beverley road, four blocks, estimated cost \$3,800; regulating and grading West Third st., from Sheephead Bay road to Neptune ave., one block, estimated cost \$1,900; regulating and grading West Thirty-first st., from Neptune ave. to Surf ave., two blocks, estimated cost \$7,600; regulating and grading Ave.



**F.** from Gravesend ave. to West st., one block, estimated cost \$1,200; regulating and grading Junius st., from Blake ave. to Livonia ave., two blocks, estimated cost \$4,200; regulating and grading and paving with second-hand granite block (preliminary pavement) Eckford st., from Engert ave. to Manhattan ave., one block, estimated cost \$3,100; regulating and grading and paving with asphalt (preliminary pavement) Seventy-first st., from Tenth ave. to Eleventh ave., estimated cost \$4,800; paving with granite block (permanent pavement) First ave., from Fiftieth st. to Fifty-second st., and from Fifty-third st. to Sixtieth st., nine blocks, estimated cost \$20,000; paving with asphalt (preliminary pavement) Thirty-eighth st., from Fort Hamilton ave. to Thirteenth ave., two blocks, estimated cost \$9,100; paving with asphalt (permanent pavement) Sixteenth ave., from Sixty-eighth st. to Seventieth st., estimated cost \$5,200; paving with asphalt (preliminary pavement) Eighty-fifth st., from Eighteenth ave. to Twenty-first ave., three blocks, estimated cost \$12,700; paving with asphalt (preliminary pavement) New York ave., from Clarendon road to Canarsie lane, one block, estimated cost \$3,500; paving with asphalt (preliminary pavement) Atkins ave., from Pitkin ave. to Sutter ave., two blocks, estimated cost \$5,800; paving with asphalt (preliminary pavement) Irving ave., from Putnam ave. to Weirfield st., four blocks, estimated cost \$7,700; paving with asphalt (permanent pavement) New Lots road, from New Jersey ave. to Dumont ave., one mile, estimated cost \$28,800.

**Buffalo, N. Y.**—Common Council has ordered paving of Saybrook pl. with brick or asphalt; also repaving of Military road, 40 ft. wide, with asphalt, between Grant st. and the Lackawanna Railroad.

**Herkimer, N. Y.**—Village Engineer Wilber has submitted estimates on cost of paving Bettinger ave. from Prospect to Bellinger st., and also for paving of North and South Bellinger sts. Engineer was directed to prepare plans for paving of above named streets.

**Newburgh, N. Y.**—As result of visit to Storm King Mountain by State Highway Superintendent Reel and Orange County authorities, it was agreed tentatively that Storm King State road should tunnel mountain 1,300 ft., with gallery construction. County Supervisors will take proceedings to condemn land. Road will cost \$200,000 and will run through picturesque Hudson Highlands.

**Newburgh, N. Y.**—Question of ordering supply of sprinkling oil for streets for coming summer is being discussed.

**Newburgh, N. Y.**—It has been decided to extend laying of new sidewalks on both sides of First st., from Grand st. to Liberty st. This will make new sidewalk run from Grand st. through to DuBois st.

**Newburgh, N. Y.**—Permanent improvement of Mill st. from Broadway south to Quassaick Creek has been taken up. City Engineer Blake said it would cost between \$35,000 and \$40,000 to do work. It was decided to recommend to City Council that this work be ordered done and that street be designated one of main approaches to city.

**North Tonawanda, N. Y.**—Opening of Thompson st. to its full width is being discussed.

**Port Jervis, N. Y.**—State Legislature of Pennsylvania will consider question of submitting to voters proposed constitutional amendment to borrow \$50,000,000 for construction of highways.

**Rochester, N. Y.**—Alderman Sloman, of Sixth Ward, introduced ordinance providing for new and uniform sidewalk in East ave., from Main st. to Alexander st.

**Sag Harbor, L. I., N. Y.**—To take care of increase in automobile traffic expected over new State road soon to be built through this village, trustees have purchased strip of land at corner of Main and Washington sts. and will widen highway at what has heretofore been a very dangerous corner.

**Syracuse, N. Y.**—Bids on three contracts for grading work have been opened by Board of Contract and Supply. The bids were as follows: Grading Tompkins st. from Milton ave. to Myrtle st., Lyman Huntley, \$1,844; Antonio Mondo, \$1,899; Eagle Paving Co., \$2,615. Grading Marshall st. from Comstock to Ostrom ave., Eagle Paving Co., \$308; Lyman Huntley, \$370; Antonio Mondo, \$455. Grading Helen st. from Roby st. to Elsner st., Lyman Huntley, \$759.50; Eagle Paving Co., \$884.

**Syracuse, N. Y.**—City Engineer Allen has sent communication to Council to effect that sections of following streets

are eligible for resurfacing: West Genesee, Cedar, East and West Fayette, East Jefferson and East Genesee and Park ave. Asphalt was specified as material to be used in paving of Almond st. from East Jefferson to Cedar, and North Franklin st. from Erie Canal to Noxon st. Grading of Culbert st. through to Seventh North st. has been ordered in ordinance introduced by Alderman M. A. Miller, of Second Ward.

**White Plains, N. Y.**—At meeting of Board of Supervisors County Engineer Wulff has stated to Board that county was entitled to \$1,800,000 as its share of authorized issue of \$50,000,000 for good roads, which issue was approved by voters last November. To this amount should be added 35 per cent. more which county will furnish, making total of \$2,430,000 available for construction of good roads coming year, or enough to construct 243 miles.

**Rocky Mount, N. C.**—Board of Aldermen of Rocky Mount have formulated plans for submitting to vote of citizens bond issue of \$200,000 to be used for further extension of permanent street pavements, extension of sewerage and light systems and erection of municipal gas plant. Special authority for issuing of bonds to this amount will be asked from present session of State Legislature and proposition submitted to vote at special election to be called in spring. For extension of permanent street pavement, sewerage and lights, sidewalks and floating indebtedness bond issue of \$135,000 will be asked. Board plans to lay about 15,000 yards of street pavement, abutting property owners to bear one-fourth of cost and city to pay balance, including cost of curbing and crossings. Streets included in proposed permanent paving district include portions of principal business and residence sections, which remain unpaved at present. Estimate of cost of this work on part of city is \$50,000.

**Akron, O.**—Resolutions have been adopted for improvement of various streets. Ira A. Priest, Clerk of Council.

**Massillon, O.**—Resolutions are being considered by Paving and Grading Committee for paving of Park st., from Tremont st. to Perry st.; for paving of Wellman st., from Lincoln ave. to Pine st., and for paving of Houston st., from Tremont st. to Wabash ave.

**Toledo, O.**—Grading and paving of Thomas st., from Orchard st. to Lotus ave., has been authorized.

**Toledo, O.**—Ordinance has been passed to provide for issue of bonds to pay for improvement of Erie st. No. 14.

**Toledo, O.**—Plans are being considered for abolishing dangerous grade crossings.

**Toledo, O.**—Civic Center Commission recommends widening of Beech st. to 100 ft. and extension of same street to Cherry, St. Clair and Summit sts., connecting with new Cherry st. bridge approach.

**Toledo, O.**—Final step toward paving of Summit st. from Perry st. bridge to Cherry st. has been taken by Council when ordinance was passed providing for improvement.

**Youngstown, O.**—Ordinance has been passed to proceed with Fulton st. paving.

**Youngstown, O.**—City will receive bids until 2 p. m. Feb. 17 at office of D. J. Jones, City Auditor, West Boardman st., for following bonds: \$11,240 New York ave. paving bonds, \$12,425 Woodward ave. paving bonds, \$1,500 Short st. paving bonds, \$4,840 Cedar st. paving bonds, \$4,665 Prospect st. paving bonds, \$3,600 Murdock st. paving bonds, \$6,925 Chalmers ave. paving bonds, \$3,500 First st. paving bonds, \$8,210 Prospect st. paving bonds, \$7,610 Martin st. paving bonds, \$2,285 Oxford ave. paving bonds, \$410 Otis st. grading bonds, \$740 Howard st. grading bonds, \$455 Greenwood ave. grading bonds, \$790 State st. grading bonds, and \$4,060 Heasley st. sidewalk bonds.

**Eugene, Ore.**—Petition to widen East Eleventh st. has been received and referred to Street Committee with favorable comment.

**Portland, Ore.**—Construction of Hood River road, along the Columbia, is being hurried. Estimated cost \$75,000.

**Easton, Pa.**—Mayor Nevin has recommended bond issue of \$200,000 for improvements.

**Erie, Pa.**—Resolutions have been adopted for drawing ordinance for paving with brick alley between State and Peach sts., from Eleventh to Twelfth st., and to repair pavement adjoining its tracks on West Eighteenth st.

**Erie, Pa.**—Resolution has been adopted for drawing ordinance for paving with brick of alley between State and

Peach sts., from Eleventh to Twelfth sts.

**Franklin, Pa.**—Plans for street paving are being considered to cost about \$19,000.

**Pittston, Pa.**—Widening of Water st. is being considered.

**Seranton, Pa.**—Ordinance has been passed authorizing grading, paving and curbing of the westerly side of South Main ave., from Sloan st. to southerly city line, Twenty-second Ward; also grading, paving and curbing of Prescott ave., from Linden st. to Mulberry st., in the Seventeenth Ward. Ellsworth Kelly, City Clerk.

**Newport, R. I.**—Board of Aldermen has voted to recommend various beach improvements. It will recommend to Representative Council laying of 360 ft. of granolithic sidewalk 12 ft. wide, and 360 ft. more or less, of retaining wall between sidewalk and bathing houses, from main entrance westward, together with 360 ft. more or less of granite curb; also extension of present board walk, 900 ft. more or less, of same width as present walk.

**Charleston, S. C.**—The Committee on Streets has instructed City Engineer to call for estimates for laying approximately 30,000 sq. yds. of pavement on concrete base on various streets in city of Charleston. List of streets will be furnished later. Forms of proposals and specifications, together with necessary information will be furnished by City Engineer at City Hall.

**Dallas, Tex.**—Property owners and merchants on Elm st. from Ervay to tracks of the Houston and Texas Central Railroad want wider sidewalks.

**Fort Worth, Tex.**—Terrell ave. has been ordered paved from South Main to Hemphill st. by City Commissioner.

**Galveston, Tex.**—Commissioner Austin has been granted authority to advertise for bids for paving north side of Broadway from Fourteenth to Tremont st., and south side from Fourteenth to Twenty-fifth st.

**Houston, Tex.**—Harris County will decide on Feb. 20 whether or not bonds in sum of \$1,000,000 shall be issued for extension and improvements of Harris County roads.

**San Antonio, Tex.**—Committee has introduced ordinance appropriating \$1,200 for macadamizing of North Center st., between Walnut and Cherry sts.

**Bedford, Va.**—The Pike Good Roads Association intends to co-operate with county officials immediately in building one mile of permanent road at estimated cost of about \$4,300.

**Portsmouth, Va.**—The Sixth Ward Local Board has decided to go ahead with its paving program in High st., from city limits at Ninth ave. to east side of Cooke st. It has been announced by local board that its present paving plans would terminate at east side of Cooke st. pending rearrangement of Seaboard Air Line and Traction Co.'s tracks in High st., between Chestnut and Cooke sts.

**Seattle, Wash.**—Resolutions have been adopted for improvement of various streets.

**Sumner, Wash.**—Mayor R. R. White, in speech to Council, has recommended extension of streets and sidewalks around city.

**Tacoma, Wash.**—Commissioner of Public Works Owen Woods and City Engineer W. C. Raleigh have announced that petitions had been filed for approximately \$1,000,000 worth of municipal improvements on streets of Tacoma to be finished this summer. Ten paving jobs in north and south ends of city have been asked for by property owners who are willing to pay for work. Cost of pavement already petitioned for has been estimated by City Engineer Raleigh, after drawing up plans, at \$500,000. Sidewalks to cost \$100,000 have been asked for, or will be peremptorily built by council. List of street pavement improvements on which increased force in City Engineer's office is busy drawing up plans and the estimated cost, is as follows: South Tacoma road, from Center and M sts., to connect with present pavement at Thirty-sixth and Warner sts., \$65,000; hill road to Puyallup, from Indian cemetery to Browning st., city limits, \$35,000; North Twenty-eighth st., from Junett st. to Proctor st., \$25,000; Proctor st., from North Twenty-sixth to North Twenty-ninth st., and North Twenty-sixth st., from Union to Proctor sts., \$30,000; Yakima ave., from South Thirty-eighth to Forty-eighth sts., \$30,000; Yakima ave., from South Thirty-eighth to Forty-eighth sts., \$30,000; Fife st., from South Twelfth st. to North Twenty-first st., \$50,000; L st., from North Sixth st. to Steele st., \$25,000;

North M. Sheridan and O sts., from North Fifth to Steele, and North Eighth st., from K to Ainsworth ave., \$90,000; South Ninth st., K to Sprague, \$35,000; Alder st., North Fifteenth to North Twenty-first st., \$15,000; miscellaneous paving, \$100,000.

**Milwaukee, Wis.**—Milwaukee and Chicago are to be connected by interstate highway, skirting bluffs of Lake Michigan, provided plans now being considered by Sheridan Road Improvement Association are carried to completion. First step in making new highway will be taken this spring, when roadway from Devon ave., Chicago, will be widened and boulevard to naval training station at Lake Bluff. This work will mean that one-half of road to Milwaukee has been completed. When this is done it is expected that Sheridan Road Improvement Association will seek co-operation of Milwaukee in building remaining 45 miles of roadway, which is to connect two cities.

**Fort William, Ont.**—City Council is planning street improvements to cost about \$10,500. A. J. McNaughton is City Clerk.

#### CONTRACTS AWARDED.

**Birmingham, Ala.**—By Board of Revenue, contract to Sam E. Findley, of Atlanta, to cover not less than 10 or more than 15 miles of macadamized road of county with asphalt covering or binder. Contract has been signed by R. F. Lovelady for board and by Mr. Findley, who is patentee of process by which roads of Jefferson County are to be fixed. There was only one other bid, that of Standard Oil Company, who proposed selling county materials for treating roads. Estimated cost of contract is \$20,000. Under Findley process roads are to be rendered noiseless, mudless and dustless and will when finished resemble bitulithic paving of city.

**Alhambra, Cal.**—To J. Montgomery, for improvement of Cedar st. at 3½ cts. per sq. ft. for paving, 30 cts. per lin. ft. for curb, 10½ cts. per sq. ft. for gutter.

**Burbank, Cal.**—To George H. Oswald, O. T. Johnson Building, Los Angeles, for improving 5,500 ft. of Tehunga ave., at 39 cts. per lin. ft. for grading, 2½ cts. per sq. ft. for oiling and tamping, 25 cts. per lin. ft. for curb, 9 cts. per sq. ft. for sidewalk, and \$3 per lin. ft. for culverts.

**Colton, Cal.**—To Paonessa Construction Co., Story Building, Los Angeles, contract for paving portions of Eighth, I and J sts., at \$29,722.

**Los Angeles, Cal.**—To W. F. Hewitt Co., contract for improving and paving with brick portion of Seventeenth st., at \$14,494.

**Pasadena, Cal.**—To T. L. Syertson, contract for improving Broadway, Ritzman and Pico sts., at \$5,266.

**San Francisco, Cal.**—To St. Paul & Lancia Lumber Co., for furnishing of creosoted blocks for paving of wharves No. 26 and 28.

**Venice, Cal.**—To Braun, Bryan & Austin, of Venice, contract for improving Royal Court alleys and Thornton pl., at 15½ cts. per sq. ft. for paving, 12 cts. per sq. ft. for sidewalks, and 31.4 cts. per lin. ft. for curb, and John D. Marsh, Wilson Building, Los Angeles, was awarded contract for improving Vista Del Mar ave. and other streets at 19 cts. per sq. ft. for paving, 36 cts. per lin. ft. for curb, 11½ cts. per sq. ft. for sidewalk, 4c per sq. ft. for grading. Total, \$11,996.

**Bridgeport, Conn.**—B. D. Pierce, Jr., Co. has been awarded contract to construct about 6 miles of State road from Trumbull and Bridgeport line to Stepney line, by Highway Commissioner J. H. Macdonald. Cost will be about \$30,000. Roadway will be 14 ft. wide.

**Delphi, Ind.**—By Board of Commissioners of Carroll County, to Reed M. Wikle, Young America, Ind., at \$2,695, for grading, paving, draining and improving gravel road in Carrollton.

**Cravfordville, Ind.**—By County Commissioners of Montgomery County, as follows: Constructing the Sennett road, in Union Township, Snyder & Bennett, at \$7,826; improving four gravel roads, to George B. Lynch, of Darlington, improving one road, to F. H. Neil & Co., of Darlington, improving one road, to Ireland & Harrison, of Rockville.

**Fort Wayne, Ind.**—City now has contracts for 6,000 ft. of paving, which improvements were not finished last year because agreements were entered into too late in fall to admit of physical work being started. Contracts are with Brooks Construction Co., which has agreed to lay 1,600 ft. on Summit st., 150 on Webster and the College st and Union st. subways under the Pennsyl-

vania tracks; the C. E. Moellering Construction Co., with 292 ft. on Morrison st. and 1¼ miles of sidewalks and 2½ miles of sewers, and the Fairfield and Broadway subway jobs under the Wash-bash tracks; Tripper & Sons, 974 ft. on Greenwood ave.; the Grace Construction Co., 1,138 on Huestis ave. from Broadway west, 1,260 on Taber st. from Lafayette to Hanna, and 606 on Lincoln

**Indianapolis, Ind.**—By Board of Public Works, contract to Marion County Construction Co., 1600 S. West st., at \$17,868, for paving Division st., from Oliver st. to Ritter ave., with asphalt.

**Mishawaka, Ind.**—For construction of asphalt paving on E. Second st., between Niles ave. and Berger st., by Bd. of Pub. Works to Rankert & Eggleston, of Mishawaka, at \$40,816.36. Work consists of 20,165 sq. yds.

**Rockville, Ind.**—By Board of Commissioners of Parke County, for construction of roads as follows: J. H. Kerr, gravel road, William Carty, \$9,213.94; Lincoln road, Peter Platter & Son, \$665.

**Louisville, Ky.**—Following contracts for road work in Jefferson Co. have been awarded by County Commissioners: Constructing the H. D. Peet rd. in Utica Township, M. M. O'Neill, at \$8,300; constructing Wood Township rd., R. W. Peacock, at \$14,099; constructing Charlestown Township rd., E. M. Lutz, at \$6,375; repairing and grading Bull Creek Hill rd., W. W. Taggart, at \$46,250.

**Natchez, Miss.**—Lowest bid received by the Board of Supervisors of Adams County for construction of 60 miles of county roads is that of Garret-Brewer Co., \$99,684.20. Other bids as follows: Worthington Construction Co., \$150,390; P. W. Mulvihill, Sr., \$161,951.65.

**Rome, N. Y.**—The State Highway Department has consented to pave connecting links in this city with Warren Bros.' bitulithic pavement. State aid part being estimated at \$65,500.

**Columbus, O.**—By Department of Public Service, following pavement contracts, tar filler to be used in each instance: Cross st., from Kling to Miami, William Lee, \$17,063; Rhodes ave., from Wooster to Gale st., McAlonan Bros., \$36,791; West Crozier st., from Main to Wilhelm, William Lee, \$18,009, and Yale extension from Crozier to Long st., Josiah Wigley, \$5,837.

**Hamilton, O.**—For paving of Sycamore st., to Andrew Asphalt & Paving Co., for \$30,522; estimate, \$32,000.

**Portland, Ore.**—To St. Paul & Tacoma Lumber Co. for furnishing of creosoted blocks for paving New Broadway st. bridge.

**San Angelo, Tex.**—To Moxley & Co., of Sweetwater, contract for placing of more than 40,000 sq. yds. of pavement by City Council. Bid of this company was \$12.23½ cts. per sq. yd. Paving is asphalt on concrete base.

**Colfax, Wash.**—For construction of Roads 4 and 5 in Whitman County, to Spokane Asphalt & Macadam Co., at \$13,779 and \$23,628 respectively.

**Burnaby, B. C.**—For paving of Kingsway road, to Canadian Minerals Rubber Co., 18 Hastings st., Vancouver, at \$334,000.

#### SEWERAGE

**Berkeley, Cal.**—After several months spent in gathering facts and details, City Engineer J. J. Jessup has submitted to City Council plans and specifications for sewers which are proposed for Berkeley. In one estimate cost is given as \$475,000. Another division for which plans have been drawn, covering partial territory, entails expenditure of \$170,000. City Council will consider both propositions and will then call election for issuance of bonds.

**Pasadena, Cal.**—Council has voted to deny protest against northeast storm drain and in favor of going on with the work.

**Johnstown, Col.**—Johnstown's bond issue for \$2,500, voted in October, has been declared illegal by attorneys, and it is probable that question will again be passed on at municipal election to be held in May. Money was voted for construction of sewer system.

**Rockford, Ill.**—Board of Local Improvements is having plans prepared for construction of sewer system for the West End to cost \$30,000.

**Kokomo, Ind.**—Board of Public Works has passed resolution for construction of sewers in Firman, Washington and Hoffer sts. Bids will shortly be asked.

**Muncie, Ind.**—Special Committee has received petition for construction of local sewer in Eighth st., from center of Monroe and Eighth sts. to center of Plum st.

**Lowell, Mass.**—The Municipal Council has passed order to borrow \$4,000 for completion of sewer begun last year.

**New Bedford, Mass.**—City Council Committee on Roads and Sewers have voted to continue Beech st. and Oaklawn st. sewer, and to lay sewer in Brock ave. south to Capitol st.

**Duluth, Minn.**—Engineer has estimated that storm sewer in Vermilion road and Princeton ave., improvement of which have already been ordered, would cost \$6,585.59.

**Springfield, Minn.**—Resolution has been adopted authorizing construction of sewers in Jackson st., South Jefferson st. and various other streets.

**Elizabeth, N. J.**—Engagement of expert upon intercepting sewers and abolishment of private sewers emptying into Elizabeth River, between Bridge and South Broad sts., have been ordered by special committee of City Council upon river improvements.

**Harrison, N. J.**—Question of construction of trunk sewer through part of village of Rye is being discussed.

**Newark, N. J.**—Construction of 12-in. pipe sewer in North Twelfth st. and South Thirteenth st. has been authorized. M. R. Sherrerd, Chief Engineer.

**Passaic, N. J.**—Director of Department of Streets and Public Improvements has been authorized to have flush-tank built at westerly end of sanitary sewer in Brinkerhoff place.

**Rahway, N. J.**—Definite plans for sewerage disposal plant for this city will shortly be filed with State Board of Health.

**Trenton, N. J.**—Ordinance has been adopted for issuing of bonds to meet expenses of constructing various sewers. Frank Thompson, City Clerk.

**Brooklyn, N. Y.**—Petition for construction of sewer and appurtenances in Fulton st., from Vandever ave. to Ocean View ave., and in Ocean View ave., from Fulton st. to Ridgewood ave., Jamaica, has been adopted.

**Brooklyn, N. Y.**—Following is list of final authorization for Brooklyn approved at last meeting of Board of Estimate Jan. 23: Sewer in Canarsie la., from Flatbush ave. to Bedford ave. Estimated cost, \$2,500. Sewers in Sixty-fourth st., from Eighth ave. to Ninth ave., and Ninth ave., from Sixty-third st. to Sixty-fourth st. Estimated cost, \$3,900. Sewers in Eighth ave., from Thirty-seventh st. to Thirty-eighth st., and in Thirty-seventh st., from Eighth ave. to existing manhole about 13 ft. easterly therefrom. Estimated cost, \$1,200. Following are preliminary authorizations: Sewer in Twelfth ave., from Thirty-sixth st. to Thirty-eighth st., and in Thirty-sixth st., from Twelfth ave. to Church ave. The outlet sewers are provided for. Estimated cost, \$9,600. Sewer in Thirty-sixth st., from Fourteenth ave. to West st., two blocks. Estimated cost, \$3,400. Sewers in Fourth ave., from Eightieth st. to Eighty-first st., and in Eighty-first st., from Third ave. to Fourth ave. Estimated cost, \$4,900. Sewer in Erasmus st., from Rogers ave. to Bedford ave., four blocks east of Johnson pl. Estimated cost, \$7,000. Sewer in Henry st., from East Eighth st. to Ocean Parkway, and in East Seventh st., from Henry st. to Johnson st. Estimated cost, \$4,600. Sewer in Ave. C, from Gravesend ave. to West st., and in West st., from Ave. C to Cortelyou rd. Estimated cost, \$5,700. Sewer in Ave. D, from East Thirty-fourth st. to Brooklyn ave., two blocks. Estimated cost, \$3,400. Sewer in Eighth ave., from Thirty-seventh st. to Thirty-eighth st., and in Thirty-seventh st., from Eighth ave. to the existing manhole about 13 ft. easterly therefrom. Sewer in Riverdale ave., from Christopher ave. to point 100 ft. west of Powell st., and a receiving basin at northwesterly corner of Riverdale ave. and Junius st. Estimated cost, \$1,600.

**Patchogue, L. I., N. Y.**—Question of proper system of sewers for Patchogue with sewage disposal plant is again being considered. Proposed reorganization of State Health Department by Governor Sulzer will, if carried out, force this village to establish adequate system.

**Poughkeepsie, N. Y.**—Communication from Board of Public Works recommending storm sewer on Washington st. from Taylor ave. to make connection at Bain ave. has been approved. Board of Public Works also recommended sewer on proposed new street along Fallkill from Mansion st. to Cottage st.

**Poughkeepsie, N. Y.**—Order has been given to City Engineer to construct sewer 1,000 ft. long on Grant, between Winniker and Harrison sts.



**Rochester, N. Y.**—Plans are nearly completed for construction of sewage disposal plant. Present plan provides for purchase of 14 sets of Imhoff tanks, with 3 in a set, making total of 42 tanks, although eventually there may be 20 sets of tanks installed. Each tank is calculated to take care of 20,000 people, so that 14 tanks would care for sewage of population of 280,000. Tanks will be arranged in two rows, and will occupy about 3 acres of land, while sludge beds will occupy about 3 more acres.

**Syracuse, N. Y.**—Bids for one sewer contract has been opened as follows: Laying 12-in. pipe sewer in Hawley ave., from Fountain st. to Oak st., from Beech st. to Vine st., and from Sherwood ave. to Teall ave., and a 15-in. pipe sewer in Fairview ave., from Hawley ave. to Burnet ave. Charles Bonn, \$3,440; Antonio Sposato, \$3,726; Phillip Thomas, \$3,860.50; Antonio Mondo, \$4,349.50, and James Swift, \$4,572.

**Akron, O.**—Legislation is to be introduced in Council at next meeting which will provide for building of new main trunk sewer from South st. to Kenmore boulevard. Proposed sewer will cost nearly \$40,000.

**Johnstown, Pa.**—Mayor Cauffiel in his annual message recommends installation of complete sewer system.

**South Bethlehem, Pa.**—Bids for sewer construction have been advertised and site for sewage disposal plant is being considered.

**Williamsport, Pa.**—Bill providing for storm sewer on Mulberry st. from Bennett st. to the Grafius sewer has been referred to Highway Committee.

**Edgewood, R. I.**—The creation of special sewer district for Edgewood and Pawtuxet is being considered.

**Bridgewater, Va.**—Town will hold special election on Feb. 21 to vote on question of bond issue of \$25,000 for installation of sewerage and water systems.

**Seattle, Wash.**—Resolutions have been adopted for construction of sewers in various streets.

**Racine, Wis.**—City Council has decided to submit \$185,000 bond issue for sewers in outlying districts to vote of people at primary election in March, preferring paper ballots to voting machines.

#### CONTRACTS AWARDED.

**Los Angeles, Cal.**—For sewers, by Board of Public Works, as follows: Holt & Jeffery, of Seattle, Wash., for construction of the Arroyo de La Brea storm water sewer system, at \$534,000 (bids opened Jan. 6); to John Balch, for construction of a public sewer in Santa Cruz st., between Pacific and Grand aves., at \$33,983, and to M. N. Pakich, for construction of 4 and 6-in. house sewer connections in the Vermont ave. square tract at \$30,000.

**Carbondale, Ill.**—For East Side sewer system, to J. E. & J. B. Craine, at \$8,257.

**Livingston, Mont.**—To Lindstrom & Oren, of Billings, contract for constructing sewers in new improvement district, at \$59,600.

**Larchmont, N. Y.**—By village, contract for constructing sewers, to Michael Deccio, of Larchmont, at \$24,959. Engineer is L. E. Van Etten, of New Rochelle.

**New York, N. Y.**—To Rogers & Hagerty, One Hundred and Fifty-second st. and Harlem River, at \$568,000, for sewers and appurtenances in Lacombe, Metcalf ave. and One Hundred and Seventy-seventh st., between Bronx River and Bronx River rd.

**Rochester, N. Y.**—By Board of Contract and Supply, contract for construction of sewer in Fairview ave., to Passero & Petrossi Co. for \$2,274.40. Sewer extends from point near Brooks ave. to Genesee Park boulevard, in Nineteenth Ward.

**Hamilton, O.**—By Board of Control, contract for proposed sanitary sewer in Beckett st., to Henry Kehm for \$980. Estimate, \$1,166.

**New Kensington, Pa.**—By Street Committee, contract to Reinhart Bros., East Liverpool, O., for constructing sanitary sewers in portions of various streets.

**Corpus Christi, Tex.**—By city council, for construction of storm water sewer work in downtown section of city, to J. O. Severns, of Oklahoma City, at \$13,787.40. Other bids were as follows: Trueheart & Jackson, \$13,883.80; Richmond Concrete Co., \$15,314.96; Sherman Concrete Co., \$16,503.72.

**San Angelo, Tex.**—By Council, to Smith & Phillips, of this city, contract for placing of more than \$4,000 worth of storm sewers in business sections of city.

**Seattle, Wash.**—Lowest bid received for construction of sewers on Rainier

ave. was that of International Dredging Co., at \$80,031.26. Other bids as follows: Ward & Sherer, \$91,114.94, and W. F. Meisner, \$95,335.

#### WATER SUPPLY

**Birmingham, Ala.**—Eight filtration tubs will be added to battery of 30 now in operation at plant of Birmingham Water Works Co. on Shades Mountain. Additional tubs will each have daily filtration capacity of 500,000 gallons of water, or total capacity of 4,000,000 gallons per day. With added equipment company will be in position to supply 19,000,000 gallons of pure filtered water to this city daily.

**Assumption, Ill.**—Sum of \$15,000 has been voted for waterworks.

**Paris, Ill.**—Bond issue of \$36,000 may be voted for filter plant.

**Richmond, Ind.**—Only one bid has been received by Board of Works for contract to furnish water for city for next five years. It was submitted by Richmond City Water Works Co. In the bid flat rates for water will be practically same as they are at present, but in general there is 10 per cent. reduction in meter rates. Reduction from \$55 to \$48 per hydrant was made in rates for 225 fire hydrants and reduction from \$49 to \$48 in rates for 73 hydrants, making total decrease in expense to city of \$1,648.

**West Terre Haute, Ind.**—Plans have been completed for new waterworks system including standpipe system, estimated cost, \$35,000. Bids will shortly be asked. W. R. Paige is Town Engineer.

**Farragut, Ia.**—Waterworks system will be installed here.

**Covington, Ky.**—Plans have been prepared for laying emergency main across Licking River.

**Agawam, Mass.**—Town is contemplating bond issue of \$100,000 for extending and improving its water system.

**Morgan, Minn.**—Plans have been completed for installation of water system estimated to cost \$12,435. Election will probably soon be called to vote on this project.

**St. Paul, Minn.**—Corporation Attorney O'Neill will frame ordinance for bond issue, and it will be introduced at next meeting of Assembly. Money is needed to install 7,000 meters and to lay about ten miles of mains.

**Taylor's Falls, Minn.**—Plans are being prepared by L. P. Wolff, Consulting Engineer, St. Paul, Minn., for installation of water system.

**Billings, Mont.**—Ordinance has been passed calling for election March 25 for voting on \$575,000 bond issue for construction of water works system.

**Asbury Park, N. J.**—Mass meeting will be held shortly to discuss water situation. Report has been made by T. Chalkley Hatton, Consulting Engineer, Wilmington, Del., recommending expenditure of \$700,000. Proposed improvements include two reservoirs, each with capacity of 13,000,000 gallons.

**Hawthorne, N. J.**—Construction of waterworks system has been planned.

**Morrisville, N. J.**—Morrisville Borough Council has decided to sell a \$500 permanent improvement bond to raise money to lay about 325 ft. of water mains.

**Trenton, N. J.**—Application for permission to install new water supply system for borough of Hawthorne, Passaic County, has been received by State Water Supply Commission. Alternative propositions have been submitted in specifications, both of which contemplate driving of artesian wells. First proposition was to bore two 10-in. wells in vicinity of Goffle Hill. In event of adequate supply being obtained from this source, borough would erect storage reservoir, capable of retaining 750,000 gallons. Two pumps, with capacity of 160 gallons a minute, would be installed. Failing to obtain sufficient supply from this source, artesian wells would be driven along Goffle Brook, and engines installed, having pumping capacity of 200 gallons.

**Poughkeepsie, N. Y.**—Application for three water mains for De Garmo place has been referred to City Engineer.

**Fargo, N. D.**—City Council has passed ordinance which is designed to give city supply of pure artesian water through mains. City will spend \$35,000 for this purpose. It is planned to sink artesian wells and connect with mains so that water can be used in hydrants for domestic use.

**Akron, O.**—Purchase of 600 6-in. hydrants has been recommended by Fire Chief.

**Defiance, O.**—Election will probably be held for voting on municipal ownership of waterworks.

**Niles, O.**—Bids will be received at office of City Auditor until 2 p. m., February 27, for purchase of \$5,000 worth of bonds for improvement and extension of water works system. Homer Thomas, City Clerk.

**Youngstown, O.**—Specifications for immense dam for Milton reservoir are being prepared and officials believe they will be ready to receive bids some time next month.

**Portland, Ore.**—Plans and estimates for construction of immense water mains on Fourth st. from Jefferson to Ankeny, Morrison from Fourth to Chapman, and Washington from Fourth to Fourteenth, for fire protection purposes and for reinforcing water system in central district, West Side, have been prepared by Engineer Clarke, of Water Department, who recommended to Water Board that mains be installed immediately. Engineer has submitted alternate propositions for construction of mains. One is to lay mains of 24 ins. in diameter on three streets, which he says will cost approximately \$76,650. Other is to lay a 24-in. main on Jefferson st., a 16-in. main on Morrison st., and a 12-in. main on Washington st., which will cost approximately \$56,500.

**Contesville, Pa.**—Plans have been completed by Alexander Potter, Consulting Engineer, for new water works system; estimated cost \$185,000.

**Johnstown, Pa.**—Mayor Cauffiel in his annual message recommends municipal ownership of water, gas and light.

**Providence, R. I.**—City Council has appointed special committee to investigate and report on method of increasing the city water supply. Otis Clapp is City Engr.

**Fort Worth, Tex.**—Need of 6-in. leads from Houston st. water mains to sidewalks, where 4-in. leads are now used, has been urged before City Commission by Commissioner Powell.

**Lampasas, Tex.**—City has placed contract for new 100-ft. standpipe for water works system, which will be placed alongside old standpipe on Third st. hill. As this hill is between 50 and 75 ft. higher than business portion, and large portion of residence section of Lampasas, it will be equal to a 150 or 175 ft. standpipe, which will give great pressure of water for all purposes.

**Longview, Tex.**—City Council has decided to bore another well 2,500 ft. deep in order to reach good stream of artesian water.

**Longview, Tex.**—A new water works system is to be constructed by city of Longview.

**Waxahachie, Tex.**—At meeting of City Council steps were taken to enlarge water works system. Mayor Prince recommended construction of another large reservoir and sinking of additional deep well.

**Bridgewater, Va.**—Town of Bridge-water, Rockingham County, will hold special election on Feb. 21 to vote on question of bond issue of \$25,000 for installation of water and sewerage. Last June Bridge-water voted in favor of bond issue, but election was declared null and void because ballot failed to state date of election and amount of issue.

**Boscobel, Wis.**—Citizens will shortly vote on bond issue for water works construction.

#### CONTRACTS AWARDED.

**Denver, Col.**—To Joseph Osner, of Denver, contract for completing Antero irrigation system, to include raising Antero dam 6 ft., 75 miles of high line ditch to be placed in first class shape at cost of \$100,000; extension ditch will be built from point 2 miles east of Montclair to main canal, distance of 23 miles, with carrying capacity of 400 second-ft.; lateral system of 55 miles will be constructed, two reservoirs will be built and distributing reservoir already completed will be enlarged.

**Pensacola, Fla.**—By Water and Gas Committee of City Council, for the construction of pump foundation, to W. P. Kennedy. He bid \$525.90 for building concrete foundation, but submitted no bid for concrete and brick foundation. Other bids submitted were as follows: H. E. Franklin, concrete, \$866; concrete and brick, \$794. F. M. Williams, concrete, \$793; concrete and brick, \$780. C. H. Turner Construction Co., concrete, \$760; concrete and brick, \$810.

**Burley, Ida.**—To O'Toole Bros., of Weiser, contract for constructing water works.

**Kaplan, La.**—To Ahrens & Ott, of New Orleans, contract for constructing water works.

**Doniphan, Nebr.**—To Katz Contracting Co., Omaha, Neb., contract at \$15,575, for construction of system of waterworks for Doniphan.

**Snyder, Neb.**—To Katz Construction Co., of Omaha, contract for increasing water supply.

**New York City, N. Y.**—Bids for Jerome Park filtration plant have been opened at office of Water Commissioner Thompson, but as result of understanding which Commissioner had with Controller Prendergast, no awards were made and none will be made until thorough investigation of whole proposal is effected, as requested by Controller. Lowest bid was that of Keystone Construction Co., which offered to do work for \$5,139,015. Luke A. Burke Co. made second lowest bid, \$5,672,145. Third lowest was put in by McArthur Bros., \$5,783,170.

**Sodus, N. Y.**—By Water Commissioners, contract for construction of water works, to Fischette Bros., of Clyde.

**Urbana, O.**—To Babcock Wilcox Co., of Cincinnati, by Board of Control, contract for new boiler for the water works station. Amount of lowest bid submitted by company was \$2,540.

**Fort Stevens, Ore.**—For 2,400 ft. of 4-in. cast-iron pipe to C. L. Huston, of Astoria, Ore., at \$2,225.

**Fort Canby, Wash.**—To C. L. Houston, Astoria, Ore., contract, at \$2,225, for approximately 2,400 ft. 4-in. pipe line, at Ft. Canby.

**Seattle, Wash.**—Lowest bid received for laying of water mains in East Sixteenth st. was that of Washington Construction Co., at \$18,809.40. Other bids as follows: Erickson Bros., \$19,650.30; E. J. Rounds Construction Co., \$19,594.50; Dicken & Rightmire, \$20,487.20; McQuaid & Moore, \$20,885.90; Ferguson-Coit Co., \$20,221.40; J. W. Johnson, \$19,463.25; Krogh & Jensen, \$20,479; International Dredging Co., \$20,086.90; Jahn Contracting Co., \$20,071.50.

**Rawlins, Wyo.**—To Mackay & Geddis, 401 Exchange Building, Denver, Col., contract by city for improvement of water works system at \$20,908. Work includes: Bid "A"—Furnishing all material and completing all construction work on laying of 5,000 ft. of 10-in. lap welded steel pipe, 4,160 ft. of 6-in. cast iron pipe, with necessary valves, fittings and connections. Bid "E"—Furnishing material and completing construction of 500,000 gal. steel reservoir with foundation complete.

## LIGHTING AND POWER

**St. Augustine, Fla.**—The St. Johns Electric Co. was only company submitting bid for city lighting for year. Bid was read and referred to City Property Committee to see if it conforms with last year's contract.

**Ames, Ia.**—Special election will be held Feb. 10 to decide whether city shall expend \$25,000 for building electric light plant.

**Great Bend, Kan.**—Local Committee for Preservation of State Park at Pawnee Rock, for which town is named, has decided to have row of electric lights placed along walk from town to park, and other improvements made. Legislature is being asked for appropriation of \$3,000 for improvements at park.

**Boston, Mass.**—The Rising Sun Street Lighting Co., which has had monopoly on city's street lighting by gas for years, has received another six months' extension of its contract. New extension of contract dates from Feb. 1, and will bind city to pay concern \$23.60 a lamp per year. Under extension of contract, city will be obliged to pay more than \$125,000 for gas lighting for next six months, as there are over 10,000 gas lamps on city's side streets and parks.

**Brockton, Mass.**—The Executive Committee of Brockton Chamber of Commerce has instructed its City Planning Committee to investigate advantages of a "great white way." Indications are that within few months Main and Centre sts. will be brilliantly illuminated every night.

**Virginia, Minn.**—Effort to get city to build municipal gas plant is under consideration.

**Westbrook, Minn.**—Westbrook will shortly have electric light and heating plant.

**Chillicothe, Mo.**—Extension of "great white way." Jackson st. to Milwaukee, is being considered.

**Billings, Mont.**—Bill has been introduced authorizing cities to install lighting plants and to issue bonds therefor.

**Arcade, N. Y.**—Bonds for \$9,500 have been sold for installation of new equipment in municipal electric light plant.

**Jamestown, N. Y.**—Installation of additional equipment in municipal electric light plant is being considered by Board of Lighting Commissioners.

**Niagara Falls, N. Y.**—Following is the report of H. B. Sweet, of Utica, electrical engineer engaged to investigate and report on cost of municipal electric lighting plant. Estimate for municipal plant for street lighting only was \$164,547, with \$42,080 annual cost of operation. Estimate for plant for street and commercial purposes was \$480,834, with \$167,891 for annual operation. First cost of plant for street lighting and one-half commercial lighting and power would be \$350,520, with \$114,093.80 for operating expenses yearly. Rates for arc lights with plant furnishing current for streets and commercial purposes would be \$40, as against \$52 now charged. Commercial current would be sold at .05 kilowatt hour, as against .08 charged now. It is estimated that such a plant would show yearly revenue of \$117,689. Plant for lighting streets and furnishing one-half commercial light could be run at profit of \$43,987. It is expected that all information will be turned over to Mayor Loughlin in anticipation of hearing before Public Service Commission on complaint of rates of operating company.

**Niles, O.**—Bids will be received at office of City Auditor until 2 p. m., Feb. 27, for purchase of \$5,000 worth of bonds for improvement and extension of electric light system. Homer Thomas, City Clerk.

**Steubenville, O.**—City Council has decided to construct municipal electric light plant at estimated cost of \$250,000.

**Toledo, O.**—Resolutions have been adopted for electric lighting of Klondike st., Avalon pl. and Summit st.

**Condon, Ore.**—Installation of another electric light and power plant is being discussed.

**Erie, Pa.**—A resolution for joint session Monday, Jan. 27, to award 5-year contract for lighting the City Hall has been referred to the special committee on electric lighting, to be taken into consideration with other specifications.

**Franklin, Pa.**—Plans for great white way are being considered by Council.

**Johnstown, Pa.**—Mayor Cauffiel in his annual message recommends municipal ownership of gas, light and water.

**Williamsport, Pa.**—Resolution has been adopted providing for consideration of municipal lighting.

**Pawtucket, R. I.**—In accordance with resolution passed by both branches of City Council Jan. 6, authorizing joint Standing Committee on Street Lights to execute supplementary contract with the Blackstone Valley Gas & Electric Co. for incandescent electric lighting of streets, conference will be held by persons interested, and proposition suggested in resolution will be discussed.

**Dallas, Tex.**—Property owners and merchants on Elm st., from Ervay to tracks of Houston & Texas Central Railroad want extension of ornamental street lighting system from Harwood to Union Depot.

**Richmond, Va.**—Extension of ornamental lighting is being considered.

**Eau Claire, Wis.**—Common Council has prepared specifications for installation of new street lighting system.

**Milwaukee, Wis.**—Question will probably be submitted to voters on whether or not they want a municipal lighting plant.

**Niagara Falls, Ont.**—Queen Victoria Park Commissioners have given their approval of plans of Canadian Niagara Power Co. for extension of its intake forebay. Work, which will cost about \$1,500,000, will be started next spring.

**Vancouver, B. C.**—City Council has adopted ordinance providing for construction of municipal electric light plant in West Vancouver.

## CONTRACTS AWARDED.

**Alhambra, Cal.**—By city for ornamental lighting posts, to J. M. Montgomery, at \$1,000.

**Erie, Pa.**—Contract has been awarded the Erie Lighting Co. for furnishing light at court house and jail at 2.9 per kilowatt.

**Kamloops, B. C.**—For steam pumping and electrical equipment for power station, to C. C. Moore, Ltd., Engrs., of Seattle, Wash; cost about \$96,000.

## FIRE EQUIPMENT

**Helena, Ark.**—Purchase of motor combination chemical and hose wagon is being considered.

**San Francisco, Cal.**—The South Central Improvement Association has decided to ask Fire Commission to recommend building of fire station at old site on Market st., southeast of Eleventh, and to ask Finance Committee of Supervisors to appropriate \$35,000 for same.

**Pueblo, Col.**—City is planning to erect modern fire engine house to cost about \$10,000.

**Hartford, Conn.**—Two combination motor wagons are proposed, and it is believed this apparatus will be placed with Engine Companies Nos. 5 and 12. In addition, both steam propellers, every horse-drawn engine and one spare engine will be converted into motor-driven apparatus, and every horse-drawn wagon will be replaced with automobile hose wagons. Truck No. 1, on Pearl st., will be equipped with tractor, and additional 35-ft. aerial truck will be bought and placed in commission in No. 2's house on Windsor ave. The 65-ft. truck there will be shifted to No. 12's house, on Smith st., and provide truck protection for Parkville section. Small trucks at Nos. 14 and 15 will be replaced by 65-ft. aerials, with tractors. One spare tractor will also be arranged for.

**Waterbury, Conn.**—Immediate purchase of triple combination 6-cylinder auto pump engine will be recommended.

**Lakeland, Fla.**—Motor apparatus will be purchased in near future. H. L. Swatts is Chief.

**Sarasota, Fla.**—John W. Philip, City Engineer, would like information and prices on triple combination fire auto, hose capacity 1,000 ft., and water main pumping outfit.

**Union, Ill.**—In month or two city will purchase motor apparatus.

**Broad Ripple, Ind.**—Purchase of motor apparatus is under consideration.

**Indianapolis, Ind.**—The bonds of \$75,000 issue to be sold for erection of new fire headquarters and municipal garage have been signed by Mayor Shank. Bonds will be sold Jan. 30.

**Muncie, Ind.**—Additional appropriation of \$6,540 has been made for erection of new central fire station at corner of Madison and Jackson sts. Lowest bidder named price \$5,900 above amount appropriated, which was \$17,000. Bids received were as follows: Leslie Colvin, Brookville, \$22,900 without stone ashler; Illingworth & Spangler, \$24,150 with the stone ashler and \$23,700 without; Lee M. Glass, \$24,700 with the ashler, and Witherspoon & Engler, of Chicago, \$27,500 with the ashler.

**Grinnell, Ia.**—City will shortly purchase motor combination chemical and hose wagon.

**Paducah, Ky.**—Appropriation of \$2,200 for purchase of 2,000 ft. of hose, and \$100 for five new hose couplers has been asked for by Chief J. J. Wood.

**North Adams, Mass.**—Purchase of motor apparatus is recommended.

**Pittsfield, Mass.**—Chief W. C. Shepard recommends purchase of tractor for engine, chief's auto and 1,000 ft. of hose.

**Quincy, Mass.**—Councilman Boyd has offered order for a \$6,000 auto chemical and hose truck for West Quincy.

**Adrian, Mich.**—Ordinance has been passed providing for purchase of 1,000 ft. of hose.

**Kalamazoo, Mich.**—City will shortly purchase motor apparatus. Chief is C. H. Russell.

**Virginia, Minn.**—Purchase of light, motor combination wagon has been recommended by Chief A. F. Thayer.

**Niles, O.**—At meeting of Board of Control bids were opened for construction of new fire department. Only one bid was presented, that of Rarick & Hillman, of Warren, which was for \$10,506 and was rejected on account of being in excess of estimate. Director of Safety was instructed to re-advertise for bids, which will be opened on Feb. 10.

**Elizabeth, N. J.**—Proposition to replace present No. 5 engine house with new structure adapted to motor-driven apparatus and reconstruction of No. 3 engine with addition of tractor to render it more efficient and suitable to new headquarters' station, will be submitted to City Council at its next meeting.

**Jersey City, N. J.**—Chief Conway has made following recommendations: That first class steamer be purchased and placed in house of Engine Company No. 1; also combination hose wagon, motor-driven preferred. That combination hose wagon be purchased for Engine Company No. 2, motor-driven preferred. That Engine No. 4 be rebuilt and com-



bination automobile placed in same. That combination hose wagon be purchased for Engine No. 6, motor-driven preferred. That front portion of the building of Engine Company No. 10 be taken down and rebuilt. That this company be equipped with motor-driven engine to take place of steamer. This steamer could be used in another section of city to take place of a smaller one. That large size steamer, making it three-horse hitch, be placed in Engine Company No. 11, to take place of old one, which is too small for further use in department. Motor-driven engine is preferred. That house of Engine Company No. 16 be overhauled, the chemical engine disposed of and replaced by automobile. That truck company be placed in house of Engine Company No. 20, to be known as Truck Company No. 8. This would give two trucks in this section of city and would make runs shorter for Truck Company No. 5. This house is located at Bergen and Van Nostrand aves. Would prefer motor-driven truck. That house of Truck No. 1, at Grand and Van Vorst sts., be rebuilt. That new aerial auto truck be purchased and placed in house of Truck No. 7, on Lincoln st., to replace old truck, which has outlived its usefulness. That new truck of this type be purchased and placed in house of Truck No. 6, old one to be used as auxiliary truck. That house be built and company placed in same on property owned by city on Manning ave. That 20 fire-alarm boxes be purchased this year and distributed throughout city where necessary. That new house and engine company be placed in vicinity of Communipaw ave. and boulevard. That new truck company be placed between Truck No. 3 and Truck No. 6, near Sip and Summit aves., motor-driven preferred. That automobile engine companies be placed in vicinity of St. Paul's and Tonnelle aves., near High School, Bowers st. and New York ave., and Thirteenth and Fourteenth sts. That two more companies be placed in Greenville section of city, so that this section will be properly protected in case of large fire.

**Roselle, N. J.**—About \$10,000 will be expended immediately in securing motor fire apparatus.

**Somerville, N. J.**—As soon as necessary funds are raised, motor apparatus will be purchased.

**Wildwood, N. J.**—Commissioners will erect new brick fire house for Holly Beach Fire Company No. 1.

**Cohoes, N. Y.**—Proposals for furnishing 1,000 ft. of fire hose has been opened, following being received: Eureka Fire Hose Mfg. Co., represented by Sweet & Doyle, presenting six samples, at \$1.10, 90, 72, 69, 65 and 60 cts. per ft.; Union & Globe Mfg. Co., one sample at 79 cts.; the B. F. Goodrich Co., Akron, O., represented by Scotland & Munro, four samples, at 80 cts., and two samples at 70 cts.; The Gutta Percha & Rubber Co., of New York, two samples, at 90 and 85 cts., respectively; The Bi-Lateral Fire Hose Co., of Chicago, one sample, at 72 cts.

**Toledo, O.**—No steps will be taken to install motor-driven apparatus in Toledo fire department until bonds amounting to \$200,000 are issued by city.

**Youngstown, O.**—Ordinance has been passed authorizing repairs to No. 3 chemical and hose wagon.

**Youngstown, O.**—Bids will be received until 2 p. m., Feb. 17, by D. J. Jones, City Auditor, for purchase of \$2,200 Fire Department building bonds.

**Mahanoy City, Pa.**—Purchase of motor combination chemical and ladder truck is under consideration.

**Meadville, Pa.**—Mayor F. M. Graff has recommended building central fire station at intersection of Park ave. and Center st. to house all apparatus; also purchase of one automobile combination chemical and hose vehicle and tractor for hook and ladder truck, thus eliminating all horse apparatus.

**Reading, Pa.**—The Hampden Fire Company is urging purchase of motor driven engine.

**Waxahatchie, Tex.**—City is planning to purchase combination auto fire engine. Matter has been referred to Fire Committee for investigation.

#### CONTRACTS AWARDED.

**Santa Clara, Cal.**—By city, contract to Gorham Engine Co. for one Seagrave motor combination chemical and hose wagon at \$5,500.

**Larned, Kan.**—By city to Eureka Fire Hose Co. for 1,500 ft. of Paragon fire hose. W. P. Peter, City Clerk.

**Lowell, Mass.**—By city, contract to Knox Automobile Co. for four pieces of motor apparatus.

**Bayonne, N. J.**—Bayonne Fire Department will soon be equipped with two pieces of automobile apparatus, bid of the Robinson Fire Apparatus Mfg. Co. for "jumbo" engine and combination chemical hose wagon having been accepted by City Council. Price for two machines is \$12,900.

**New York, N. Y.**—For six hand hose carts, by Depot Quartermaster, to Combination Ladder Co., New York City, \$324.

**Statesville, N. C.**—To White Co. for one 6-cylinder 60 h.-p. motor combination chemical and hose wagon at \$6,500.

**Bismarck, N. D.**—For furnishing 600 ft. of hose to Bi-Lateral Fire Hose Co., at 90 cts. per ft.

**Philadelphia, Pa.**—To Knox Auto Co., contract for one 3-wheeled tractor at \$3,800.

**Scranton, Pa.**—For furnishing 3,000 ft. of hose as follows: Bittenbender & Co., Scranton, Pa., 1,000 ft. at 90 cts.; Gutta Percha & Rubber Mfg. Co., New York, 1,000 ft. at 95c.; New Jersey Car Spring & Rubber Co., Jersey City, N. J., 500 ft. at 90 cts.; Voorhees Rubber Mfg. Co., Jersey City, N. J., 500 ft. at 95c.

#### BRIDGES

**Marysville, Cal.**—Board of Supervisors is considering the construction of two bridges over Reed Creek.

**Wabash, Ind.**—Board of County Commissioners will shortly receive bids for construction of concrete and steel bridge over Mississinewa River to cost \$9,000.

**Lexington, Ky.**—City is considering construction of viaduct from Main st. to High st., at Merino st., and also viaduct on West Main and Cox sts. W. R. McCorkle is Commissioner of Public Works.

**Lawrence, Mass.**—By unanimous vote Municipal Council went on record following a hearing at City Hall in favor of any feasible plan for proposed new central bridge.

**Grand Haven, Mich.**—Ottawa County will spare no expense in building of proposed new bridge over Grand River.

**Duluth, Minn.**—City Engineer has estimates of cost of constructing bridge over St. Louis River near Fond du Lac. First plan, not favored because of cost and difficulty of constructing approaches, calls for bridge with clearance for boats. Estimated cost was \$149,850. Second, with 100-ft. bascule, would cost \$84,000, and with 200-ft. swing would cost \$68,500. Third, built three-quarters of mile above Fond du Lac, past navigable part of river, is estimated at \$31,600.

**Cape May Court House, N. J.**—Steps to bring about construction of proposed Ocean Highway bridge across Great Egg Harbor Bay, between Summer's and Beasley's Points, have been taken by Freeholders of Atlantic and Cape May counties. Bridge committees of two bodies have appointed committee to urge project before Legislature. Engineer Rightmire, of Atlantic county, submitted plan for concrete bridge, while Engineer Rice, of Cape May, said wooden bridge could be built for \$175,000 and one with pilings and underpinning creosoted for \$250,000. Engineers were told to confer with State Road Commissioner Stevens, who have prepared bridge bill.

**Dayton, O.**—City Engineer Cummin has been in consultation with State Canal Board in reference to securing rights to erect necessary canal bridge to complete construction work of Stewart street improvement, giving approach to new concrete bridge over Miami River that will make that structure of practical use.

**Dayton, O.**—Plans for new Keowee st. river bridge have been designed by Harry F. Finke. Bids for same will be received about middle of February.

**Youngstown, O.**—Mill Creek Park Commissioners are endeavoring to make some progress with improvements scheduled for park this season. One of improvements is new stone bridge over Mill Creek where Axe Factory Run empties into Mill Creek on west side, near middle of Lake Cohasset.

**Pittston, Pa.**—Pittston is to have magnificent new bridge to span Susquehanna River at Water st., and to replace dilapidated structure now spanning river at this point. Bridge will cost county about \$300,000.

**Wilkes-Barre, Pa.**—It has been stated by County Commissioners that they expect to erect three new county bridges during year 1913, and will appropriate about one-half million dollars in budget for that purpose. Bridges are to span the Susquehanna River at Wapwallopen, Nanticoke and Pittston. All of these bridges have been recommended by grand juries and all with exception of

Nanticoke structure have been approved by court. Pittston bridge to cost about \$100,000, deck only being required, Nanticoke bridge will cost about \$200,000 and Wapwallopen bridge about \$175,000. Commissioners propose to employ engineer shortly to prepare necessary plans for three structures.

**Corpus Christi, Tex.**—The sub-committee that has in charge work of securing engineers to draw plans and specifications for proposed new causeway across Nueces bay, connecting Neuces and San Patricio Counties, have closed contract with Bartlett & Ranney, engineers of San Antonio, to do the work.

**San Angelo, Tex.**—Plans and specifications for \$60,000 viaduct to be constructed over North Concho River in this city on Chadbourne st., have been approved by County Commissioners and County Judge Frink authorized to advertise for bids. New viaduct will be more than 500 ft. long and 40 ft. wide. C. M. Davis of Fort Worth has prepared plans. It is intention of Commissioners to have other bridges constructed in county as soon as viaduct is finished which will be latter part of the year.

**Courtlandt, Va.**—Board of Supervisors have rejected all bids received for construction of steel bridges in Southampton County. Appropriation \$25,000.

#### CONTRACTS AWARDED.

**Lewiston, Idaho.**—For constructing steel bridge across Clearwater River, to Security Bridge Co., of Minneapolis, Minn., at \$46,000. D. C. Wrighter is City Engineer.

**Indianapolis, Ind.**—For constructing reinforced concrete arch bridge with stone trimmings across Crooked Creek on west side of Riverside Park, along Myer's road, Cleary-Kent Construction Co., of Indianapolis, at \$28,492.

**Legonier, Ind.**—For construction of reinforced arch bridge, 90 ft. span, across Elkhart, at Legonier, by Noble County Commissioners to Frederick Perry, of Logansport, at \$13,915. A. W. Grosvenor, 310 Bank block, Fort Wayne, is engineer in charge.

**Plymouth, Ind.**—To Rochester Bridge Co. contract at \$1,481, for footways on each side of Jefferson st. bridge in Plymouth.

**Council Grove, Kans.**—By Board of Commissioners of Morris County, contract to Topeka Bridge & Iron Co., Topeka, Kans., for reinforced concrete bridge over Neosho River; also for bridge over Clark Creek. Estimated cost, \$15,000 and \$1,953, respectively.

**Great Bend, Kan.**—By Commissioners of Barton County, contract for new concrete bridge across Arkansas River at this point to Kansas Construction Co., of Wichita, for \$24,800. Bridge is to be 24 ft. in width and will be one of finest bridges on river west of Wichita.

**Albany, Mo.**—By Board of Commissioners of Gentry County, to Midland Bridge Co., Kansas City, Mo., at \$2,094, for steel span bridge, 100 ft. long, with 30-ft. wooden approach on each end.

**Warrensburg, Mo.**—By Board of Commissioners of Johnston County, to Geo. Bird, Harrisonville, Mo., at \$20,000, for thirty steel bridges and removal of one bridge.

**Grand Island, Neb.**—By Board of Commissioners of Hall County, contract to Standard Bridge Co., City National Bank Building, Omaha, at \$7,500, for superstructure for steel bridge over north channel of Platte River, near Grand Island.

**Selo, O.**—By Board of Commissioners of Harrison County, to McMath & Kelley, Freeport, O., at \$1,635, for steel bridge at Selo.

**Tippecanoe, O.**—By Commissioners of Harrison County, contract to Central Concrete & Construction Co., Canton, O., at \$3,448, for bridge.

**Norman, Okla.**—To Kansas City Bridge Co., for erection of bridge across the South Canadian River, work to be completed by Sept. 15, 1913. Price to be paid is \$38,000.

#### MISCELLANEOUS

**Pasadena, Cal.**—J. H. Kreidler, manager of the office of Bureau Efficiency, would like to hear from concerns that manufacture garbage wagons which will dump automatically.

**Sacramento, Cal.**—Enough signatures have been secured to insure calling of bond election at which the people will be asked to vote \$700,000 for purchase of two blocks of land adjoining Capitol Park for Capitol extension purposes.

**San Francisco, Cal.**—Board of Supervisors on recommendation of Finance Committee has adopted resolution which provides sum of \$3,250,000 to be expended by Board of Public Works, out of City Hall-Civic Center construction fund bond issue of 1912, for construction of City Hall.

**San Francisco, Cal.**—Bill providing for issuance and redemption of bonds to amount of \$1,700,000 for completion of the county jail and San Francisco hospital has been finally carried.

**Hartford, Conn.**—Municipal Building plans will be altered so that building can be erected within appropriation.

**Hartford, Conn.**—Commissioners have decided to recommend to Court of Common Council that Pope-Hartford automobile patrol be purchased for use of department. Approximate cost is about \$5,000, with an allowance made for old patrol wagon which will be turned in as part payment.

**Manchester, Conn.**—Motion made by Austin Cheney that town adopt voting machines to be used at all primaries and elections has been passed by good majority. Appropriation, not to exceed \$3,500, has been made for purchase of said machines.

**Wilmington, Del.**—City Council has adopted by unanimous vote resolution favoring project to build combined city and county building at cost of \$1,500,000. Legislature will be asked to provide for commission to take charge of work and to authorize city to borrow \$900,000 on bonds to pay for its share of work. Should Levy Court fail to approve of twin building, resolution adopted by Council asks Legislature to empower city to borrow \$900,000 with which to build its own city hall, independent of county.

**Jacksonville, Fla.**—Bonds in sum of \$1,500,000 have been voted for municipally owned terminals.

**Jacksonville, Fla.**—Last installment of municipal improvement bonds has been awarded to Blodgett & Co., of New York. Proceeds of bond sale will be used for following purposes: For paving, \$100,000; for waterworks and electric light plants, \$100,000; for parks, \$50,000.

**Pensacola, Fla.**—Three bids for repairing city's wharves at Pine and Magnolia sts. have been returned to bidders without being opened, because board had not prepared plans and specifications for the work. City Engineer will arrange plans and specifications and bids will be again asked for.

**Augusta, Ga.**—Chairman S. H. Myers, of Police Committee, of Council, has announced that committee had reported favorably on resolution to install adequate system of police alarm. It will ask Appropriation Committee to provide sum necessary to install system when by advertising for bids it is known what amount will be required.

**Augusta, Ga.**—Council has authorized city to advertise sale of \$250,000 of bonds for flood protection work, bonds to be received until Feb. 6, 1913, when they would be opened.

**Indianapolis, Ind.**—Bids will be received by Board of Park Commissioners Feb. 14 for dredging bed of Fall Creek, between Thirtieth and Thirty-eighth sts., and between Northwestern ave. and Big Four Railway tracks. It is estimated that about 150,000 cu. yds. of sand and gravel will be removed and this will be used in boulevard construction along north bank of stream, where much filling must be done. All gravel islands and other obstructions in stream will be removed. It is estimated work will cost approximately \$35,000.

**Des Moines, Ia.**—Councilman Zell G. Roe has summoned architects to draw up plans for new greenhouse at Union Park, and new bathhouse on site of old one. Work of building will start with spring. Bathhouse will cost \$2,500. Greenhouse will be erected at cost of \$6,000.

**Boston, Mass.**—Council has received from Mayor Fitzgerald loans orders for \$125,000 for new municipal building in

City Square, Charlestown, and \$100,000 for new police station in Broadway, South Boston.

**Lawrence, Mass.**—City Council is considering construction of municipal wharf.

**Bay City, Mich.**—Safety gates to be used on draw bridges for purpose of decreasing danger when bridges are swung open will be adopted by Bridge Commission if such gates can be obtained.

**Grand Rapids, Mich.**—For three years, commencing March 1, the Grand Rapids Garbage Holding Co. will dispose of all garbage collected in city, and city will receive 60 cts. for every ton that is taken by company from city tanks, which will be located on island.

**Pontiac, Mich.**—Petitions for submission to people at next election of amendment to city charter providing for municipal ownership of nearly all public utilities in Pontiac are being circulated.

**Virginia, Minn.**—Board proposes to have swimming pool at South Park.

**Ilion, N. Y.**—Plans for retaining wall in West Main st., near London bridge, have been approved by State Department of Public Works, and have been returned to Board of Village Trustees. Plans call for concrete wall 860 ft. in length, extending from short distance east of London bridge, westerly to point near hospital. Wall will be 2 ft. above level of canal.

**Brooklyn, N. Y.**—Establishment of recreation pier and playground on site of Wall Street Ferry, foot of Montague st., is being discussed.

**Newburgh, N. Y.**—After long discussion on advisability of building public pier at foot of South st., Street Committee of City Council decided to put matter before citizens of Newburgh. It decided to recommend to City Council that special election be held on March 1, and that public hearing be granted taxpayers at regular meeting of City Council on March 4.

**Niagara Falls, N. Y.**—The specifications for collection of garbage by contract have been presented to Board of Public Works by City Engineer Parkhurst for consideration.

**Rochester, N. Y.**—The Accidents Prevention Committee of Chamber of Commerce in its annual report to Executive Council, recommends that gates be erected at each end of each canal bridge in city.

**Hamilton, O.**—Plans are being considered for improving parking system north of High st.

**Toledo, O.**—Addition of more motor cycles to police department is recommended.

**Toledo, O.**—Civic Commission recommends erection of city hall, for which \$750,000 bonds have been authorized; memorial hall building, cost \$250,000; federal court house, cost \$500,000.

**Youngstown, O.**—Council has again passed additional City Hall \$100,000 bond issue.

**Muskogee, Okla.**—Report of Attorney General's approval of the \$150,000 bonds recently issued for park purposes has been made to Council by W. P. Miller, Mayor.

**Johnstown, Pa.**—Mayor Cauffiel in his annual message recommends system of parks as well as playgrounds established throughout various sections of city.

**Meadville, Pa.**—Mayor F. M. Graff has recommended that at least \$1,000 be appropriated for parks.

**Meadville, Pa.**—Mayor F. M. Graff has recommended first class modern garbage collection system controlled and operated by city.

**South Bethlehem, Pa.**—Borough Council is considering purchase of police signal system.

**Providence, R. I.**—Establishment of public market or markets is being considered.

**Dallas, Tex.**—County Commissioners will shortly select architect to prepare

plans for construction of new county jail.

**Lonsdale, Tenn.**—Issuance of \$20,000 worth of bonds for various public improvements has been authorized.

**Christiansburg, Va.**—Montgomery County will shortly vote on bond issue for erection of new jail.

**Norfolk, Va.**—Ways and means for providing Norfolk with public auditorium and convention hall have been discussed by the finance committee of the city council. Cost of proposed auditorium, for which plans have been drawn, is estimated at \$150,000.

**Petersburg, Va.**—Erection of crematory to cost between \$25,000 and \$30,000 is under consideration.

**Richmond, Va.**—Purchase of new automobile patrol is being considered.

**Seattle, Wash.**—Bill submitting to voters at March election a \$2,000,000 bond issue to provide funds to establish municipal telephone system with accommodations for 166,250 telephones, has been introduced in city council by Councilman Oliver T. Erickson. Bill provides for \$500,000 general bonds and \$1,500,000 utility bonds secured by earnings of plant. Bill has been referred to committee.

**Seattle, Wash.**—All bids on purchase of machinery in garbage incinerator recently received have been rejected.

**Spokane, Wash.**—City Council has adopted resolution appropriating \$3,350 for purchase of five automobiles for use of city and providing for sale of five automobiles now in city's service. New machines will be three 5-passenger Fords, to cost \$700 each, and two 2-passenger Fords, to cost \$625 each.

#### CONTRACTS AWARDED.

**Indianapolis, Ind.**—By Board of Public Works, following contracts for municipal asphalt repair plant: For asphalt kettle, to Hetherington & Berner; six asphalt dump wagons, Studebaker Corporation; sand, to Lake Clotte Sand & Gravel Co., and for a 5-ton asphalt roller to the Good Roads Machinery Co. Contracts were let to lowest bidders.

**New Bedford, Mass.**—Committee on fire department has opened bids on two miles or more of galvanized iron wire. S. C. Love Supply Co. submitted bid of \$36.20 a mile, on extra BB No. 10 galvanized iron wire, weather-proof, as specified; and \$32.20 a mile on BB galvanized iron wire, weather-proof. A. C. Smith bid \$9.35 per 100 pounds for wire as specified, figuring 400 pounds to the mile—a total of \$37.40 a mile. The Western Electric Co. bid \$9.95 per 100 pounds, figuring 400 pounds to the mile; a total of \$36.20 a mile, with one-half per cent. off for cash in ten days. It was voted to award contract to S. C. Love Supply Co., for extra BB wire, as specified.

**Meadville, Pa.**—By Board of Health, contract for collecting garbage of city, to J. K. McCullough, of Wilkinsburg, Pa.

**Providence, R. I.**—By Board of Contract & Supply for furnishing special castings to Fuller Iron Works, for approximate amount of \$11,587.58.

**Dallas, Tex.**—By Board of Municipal Commissioners, for scavenger contract for period of one year, to J. P. McNair, on his bid of 5 cts. a cu. yd., a minimum charge of 25 cts., and additional 1 ct. per cu. yd. for deferred payments.

**Burlington, Vt.**—By Board of Finance, contracts for heating, ventilating and plumbing to be installed in present city hall, to T. A. Wheelock, on his bid of \$4,998. Contract for carpentry and mason work to John L. Bergeron & Sons on their bid of \$2,377.

**Spokane, Wash.**—City Council has opened bids and referred them for tabulation and recommendation to departments ordering articles named: On 10 dump wagons for crematory department T. J. Coffman, Studebaker, \$165, \$172 and \$182 each, according to style; Polson Implement Co., Watson wagon, \$1,900 for the 10; McGowan Bros., Eagle wagon, \$175 each; Beall & Co., Beall make, \$1,914.59 for the 10.



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